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# STEEL

*For forty-eight years*—IRON TRADE REVIEW

April 2, 1931

**NATIONAL STEEL CORPORATION**

**STRATEGICALLY LOCATED**

**CONTROLS EVERY PROCESS**

**GRANT BUILDING
PITTSBURGH, PA.**

*.....through its subsidiaries has an annual capacity of 2,240,000 tons of finished steel products*

**The National Steel Corporation and its subsidiaries, which operate their own lake steamship lines, have ample shipping facilities on the Ohio and Monongahela rivers, are fully integrated and are in position to fill exacting customer's requirements—with accuracy, quality and dispatch.**

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Great Lakes Steel Corporation, Detroit, Michigan

Weirton Coal Company, Weirton, West Virginia

Hanna Furnace Corporation, Detroit, Michigan and Buffalo, N. Y.

Hanna Iron Ore Company of Delaware, Cleveland, Ohio

Michigan Steel Corporation, Detroit, Michigan

Producers Steamship Company, Cleveland, Ohio

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Kanners' Special Cokes
A Charcoals
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Show Card Stock
Milk Can Stock
Uniform Color Blued Stove Pipe Stock
Uniform Color Blued Elbow Stock
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Blue Annealed Sheets
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V Crimp Sheets
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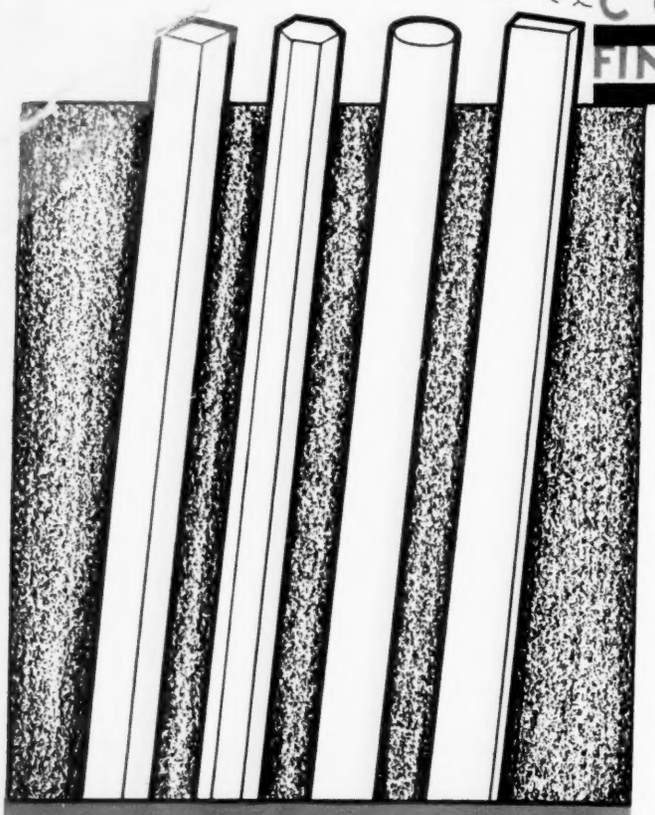

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J&L STEEL

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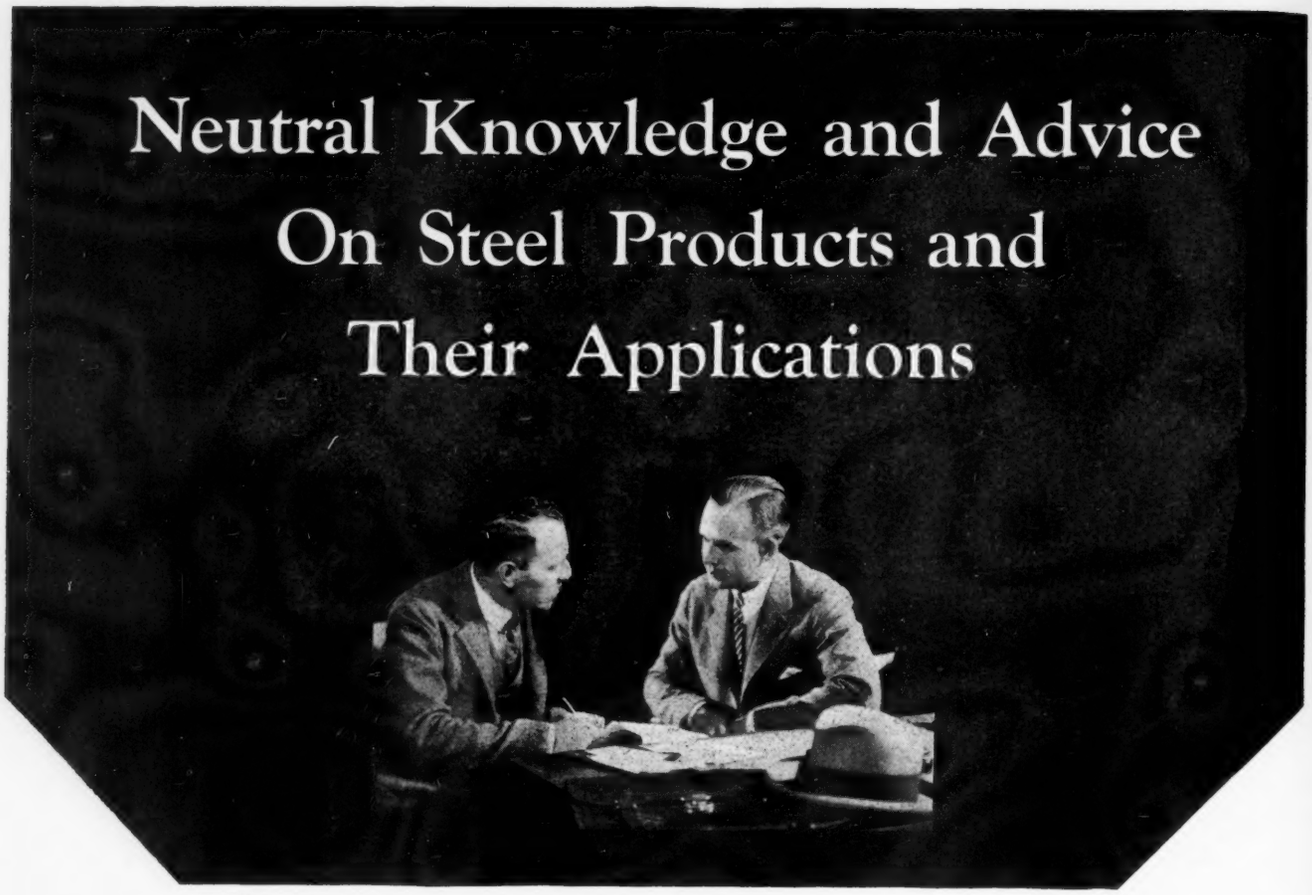
# Neutral Knowledge and Advice On Steel Products and Their Applications



It is naturally difficult for one whose life interest and capital is tied up in the production of a certain product to speak in an unbiased way concerning it. It's the greatest thing in the world to him, and he presses its sale to the utmost, as he should.

Regardless of this fact, if you hear enough men tell the stories of their various products, it is still quite possible, though difficult, to come to the right decision. However, a more satisfactory method is to secure the advice and counsel of a large dependable steel-service organization that has no financial interest in the products sold, but, on the other hand, has several similar products for varying degrees of service.

For eighty-eight years we have listened to the stories and studied the merits, bought, sold, and used practically all iron and steel products from the mild steel grades to the newer alloys and stainless types. We are in a position to know, and we have chosen for our stocks, those products which have seemed the best suited to the practical requirements of our customers.

Thus we are in a unique position to advise with you on your iron and steel problems. Bring them to us. We can help you and perhaps save you money.

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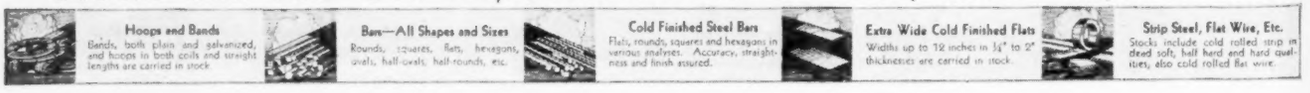
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Strip Steel, Flat Wire, Etc.
Stocks include cold rolled strip in dead soft, half hard and hard qualities, also cold rolled flat wire.

Volume 89 Number 14

STEEL

*For forty-eight years*—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

# This Week in Steel

BUSINESS tempers are in a sensitive balance, matters which in the piping days of prosperity would have been mere differences of opinion now expanding into ugly controversies. In no less than eleven large corporations, states the *New York Times*, is there noteworthy dissension. And as if steel lacked its quota of grief, through merger and bonus litigation and unremunerative markets, the government must become jumpy over the price of rails and start an investigation.

Since Oct. 1, 1922, the market on rails has been constant at $43, approaching the ideal of stabilization which is so glittering to most producers and consumers. There are only five makers of rails; safe practice induces close co-operation between the mills and railroads; rail orders are usually distributed according to freight business routed by producers over the purchasers' lines. In almost nine years of stabilization the rail price is a mean between the high and low of other steel products.

Because rails are not an active market, like bars or sheets, the department of justice probe (Page 23) will be localized, but there are engaging angles of sportsmanship and law. So long as stabilization operated in favor of the railroads the government did not intervene. And, initiated when rails are priced slightly higher than other products, is the investigation a price-fixing lever? Only two weeks ago (Page 18, March 19) the department of justice concluded its case against the Bolt, Nut and Rivet Manufacturers' association; now it attacks rails.

## Markets Undecided at Cross Roads

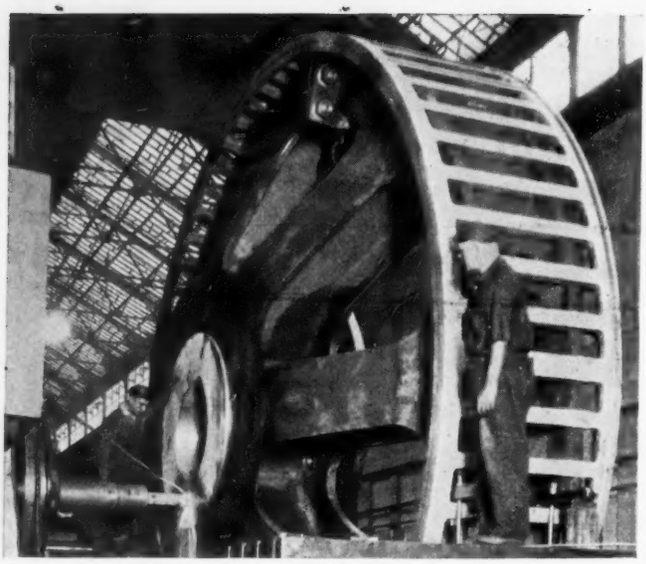
Steel, however, is more concerned right now with the course of business. The fact that for the second consecutive week steelmaking operations have wavered (Page 86) is not conclusive; in fact, in seven of the last ten Aprils the daily ingot rate has declined. In some districts more pig iron and finished steel have been booked in the past week and some progress has been made in applying higher prices on heavy steel. Contrariwise, sheet and strip prices are soft and most steel consumers are indifferent to second quarter contracts. The situation is spotted and a fortnight is too short to draw a safe generalization. There are many elements of strength (Page 79) and at the moment the steel markets may be moving horizontally rather than vertically.

## As Go Exports So Goes Production

Exports are a common denominator for steel's difficulties the world over. In France the domestic economic situation, which has been

*Acme Photo*

A mooring post for leviathans of the air. This mast, recently unveiled, is 200 feet high. The tip of it atop Empire State building, New York, is 1248 feet above the street. Much chrome-nickel was used



This cast "spider" weighing 90,000 pounds is being drilled by the Westinghouse Electric & Mfg. Co. for setting four-inch bolts to make handling easier. It is part of one of six waterwheel generators for the Union Electric Light & Power Co., St. Louis

happier than that of other nations, is deteriorating fast (Page 108) as exports decline, while the English situation (Page 106) is likewise aggravated. . . . The detail of America's iron and steel exports in February (Page 26) is not encouraging. . . . Canada, however, is a bright spot in the world's markets with a 43 per cent increase in steel production in February (Page 25). . . . And Soviet Russia, pushing its 5-year program, has placed 70,000 tons of steel with the Poles, 40,000 tons with the Czechs, and large machine tool and tin plate orders (Page 106) with the British.

## Building Continues Best Outlet for Steel

Backers of large projects, satisfied with steel prices and confident of the future, continue building as the premier outlet for steel. Including the large Pennsylvania railroad requirement, the week's structural awards approximate 144,000 tons (Page 84), with nearly 100,000 tons of new inquiry. . . . In one new tower in New York double deck elevators (Page 33) are being installed. . . . To enable fabricators in its immediate territory to share in this structural demand the Pittsburgh district continues to fight (Page 25) for equitable short-haul freight rates. . . . Henry Ford, to assure a steel supply for his English plants and get the jump on a British tariff, may buy (Page 25) several English steelworks.

## See New Uses Key to New Business

Market new products, say a majority of metal fabricators when queried (Page 24) concerning the best means out of the business depression. Reduction of costs was second as a stimulator, and a lessening of competition third. . . . One manufacturer of steel sheets has done this, introducing cribbing for retaining walls (Page 59) built up in standardized galvanized and interlocked sections. . . . Still another new outlet for sheets is in printing, a new process enabling steel to be used where formerly zinc and aluminum sheets were supreme (Page 50). . . . Steel also is finding new uses in the chemical, oil refining and steam generating industries (Page 54) as proper welding procedure and adequate testing open the door to welded pressure vessels.

## Odds on Employes' Ideas Are 3 to 1

Every third idea of its employes is sound, is the experience of a large manufacturing interest which in 1930 paid $94,091 for 9618 ideas (Page 23). In eight years this company has paid its employes $462,000 for thinking. . . . It was an ingenious mind which enabled a producer of strip to utilize (Page 48) a modified public address system with microphone and loud speaker in its new mill, facilitating the transmission of instructions from the mill floor to the control pulpit. . . . Another display of originality is in the broadening use of the new chrome-nickel steel (Page 58) for obtaining striking modernistic effects in the interiors of apartment houses, theaters and other public buildings.

## Won't Take Scrap Even as a Gift

Tammany, expecting to help replenish New York's coffers by the sale of abandoned elevated railroads, is surprised that the scrap trade insists on being paid for carting away the scrap (Page 74), so it is investigating. . . . Transportation for the younger generation, as expressed in scooters, tricycles and velocipedes, accounts for about 6400 tons of steel annually (Page 61). . . . River transportation is remaking the steel map of the South and Southwest, a Pittsburgh producer having purchased (Page 24) a large warehouse in New Orleans, to be stocked with material barged down the inland rivers. . . . This should materially assist Pennsylvania in maintaining its lead as the premier iron and steel producing state. The 1930 statistics on pig iron (Page 27) disclose the Keystone state still leading, with Ohio second, Indiana-Michigan third, and Illinois fourth.

## Excess Zinc Removed Centrifugally

No longer is it necessary in the manufacture of threaded bolts to make an allowance for galvanizing by cutting the threads undersize or enlarging the hole in the nut to provide for the coating. By the use of centrifugal force (Page 39 for extracting excess zinc from the surface of small parts the galvanizing industry has been enabled to conform to specifications which call for accurate fit between members.

# Government Opens Probe of Uniform Price for Rails

WASHINGTON—An inquiry to determine whether the maintenance of uniform prices on steel rails is in violation of the antitrust laws has been initiated by the department of justice. The antitrust section of the department, headed by John Lord O'Brian, assistant to Attorney General Mitchell, is in charge.

The inquiry is the outgrowth of a movement started largely by Senator Couzens, Republican, of Michigan. As chairman of the interstate commerce committee of the senate, Senator Couzens directed the attention of the interstate commerce commission to the fact that steel producers were lowering their quotations on numerous products but were maintaining them on rails.

Considerable correspondence between the senator and the commission followed. The latter notified the senator that it had no jurisdiction in the matter and was turning it over to the department of justice.

In announcing the inquiry, Attorney General Mitchell said the investigation will be a general one, covering all producers. Whether any litigation will be started will not be determined for some time. Apparently, the inquiry could find that the price stabilization method in force so many years is a legal one, or producers of rails could agree to abandon the method, or there could be court action under the antitrust laws in case of serious disagreement between the steel industry and the government.

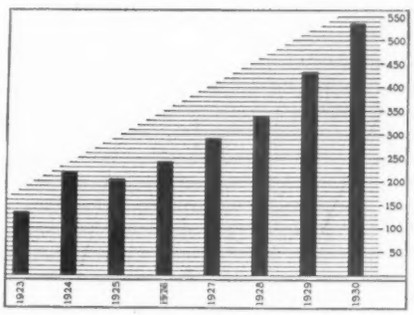
(Editor's Note: When government control was instituted in 1917, open-hearth rails were priced at $57 per gross ton and bessemer at $55. March 21, 1919, these prices were reduced $10; March 1, 1929, there was a rise of $10; Dec. 15, 1920, there was a reduction of $10; Oct. 22, 1921, there was a reduction of $5, making both grades $40; Oct. 1, 1922, the price was advanced to $43, where it has remained. There are five makers of rails: United States Steel Corp., Bethlehem Steel Corp., Inland Steel Co., National Steel Corp. and Colorado Fuel & Iron Co. See STEEL for Jan. 8, 1931, for chart comparing rail and plate prices; also editorial comment page 30 same issue.)

## Names Scrap Committees

Herman D. Moskowitz, president of the Institute of Scrap Iron and Steel Inc., New York, has appointed four committees to serve during his administration. They include the arbitration committee, with Walter Bregman, Chicago, chairman; the railroad scrap committee, with Frank Parker, Chicago, chairman; the automobile scrapping committee, with William J. Wolf, Hamilton, O., as chairman; and the committee on institute awards. Other committees will be announced by Mr. Moskowitz later.

## Employes Paid $462,000 in Eight Years for Ideas

A steady increase is recorded in the number of suggestions made by employes of the General Electric Co., Schenectady, N. Y., for improvements in manufacturing methods, equipment and products. The number submitted in 1930 was 29,919, and of these 9618, or 31.2 per cent, were adopted. The company paid for the suggestions a total of $94,091. In the past eight years its factory employes have received awards totaling $462,168 in cash or General Electric Employes Securities Corp. bonds.




*Suggestions received per 1000 eligible employes*

## Organizing Employment Stabilization Board

Washington—A small expert staff serving under a director will assemble data for the federal employment stabilization board, authorized by congress. The secretaries of the treasury, agriculture, commerce, and labor are designated by law to serve on the board.

Administrative arrangements necessary to its functioning now are being made at the department of commerce. The board will seek to bring about the advance planning of public improvements, to speed up expenditures during dull business periods and to slow them during prosperity. State and local governments may co-operate.

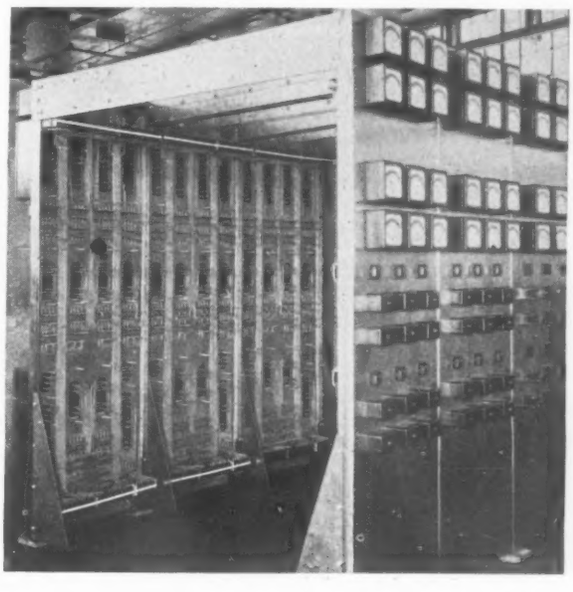
## Merger Rumors Are Denied

Rumors that the American Rolling Mill Co., Middletown, O., may be merged with the United States Steel Corp. or the Bethlehem Steel Corp., which have been circulated in financial news, are denied. A representative of the Mellon interests denies any proxy contest in this company.

Reports are again afloat concerning a merger of Republic Steel Corp. with the Bethlehem Steel Corp.

## 26 Ships Are Building

Washington—Twenty-six vessels for foreign trade, costing in the aggregate $116,838,324.64, were under construction in American shipyards March 1, and in addition five vessels were being reconstructed for overseas trade at a cost of $8,838,850.



*RUSTLESS steel, stretcher leveled, with dull polished satin finish, has supplanted slate in a large power plant switchboard at the Fordson plant of the Ford Motor Co. It gives greater compactness and obviates necessity for finishing with paint or lacquer. General Electric Co. designed the board*

When completed the majority of these vessels will be operated over routes covered by ocean mail contracts awarded under the terms of the Jones-White law. Loans covering 75 per cent of their construction cost have been authorized by the shipping board.

## Iron, Steel Price Index Up

Washington — Iron and steel wholesale price index number for February was 88.4, compared with 88.1 for January and 94.8 for February, 1930, taking 1926 as 100, according to the bureau of labor statistics, department of labor.

February automobile index number was 98, compared with 98.7 for January and 106.8 for February, 1930. Agricultural implements index for February was 94.7, the same as for January and comparing with 96.1 for February, 1930.

## Employes Satisfied with Distribution of Work

Washington—George H. Charls, president, National Association of Flat Rolled Steel Manufacturers, Cleveland, has submitted a second report to Col. Arthur Woods, chairman of the President's emergency committee for employment. This gives further details from reports of member companies as to how they are providing work for employes. The reports indicate employes generally are satisfied with various methods whereby all of them are afforded a portion of their customary time. Some employers are making loans or extending credit, and there does not appear to be any distress.

## New Products First as Business Stimulator

Development of new products ranked first among suggestions for reviving business proposed by 451 representative metal fabricators canvassed by the Sherman Corp., Boston. The same formula was a close third in the canvass of 2034 executives of all industry, including the fabricators. The factors proposed for reviving business and the number of times advocated are:

| Factors | 451 Leaders in Metal Products Group | 2,304 Leaders in all Industries |
|---|---|---|
| New product development | 288 | 1025 |
| Reduced operating costs | 258 | 1027 |
| Lessening of competition through trade association practices | 257 | 980 |
| Improved manufacturing procedure | 246 | 857 |
| Shorter working hours | 224 | 742 |
| Revised sales and merchandising plans | 222 | 1028 |
| More liberal buying | 220 | 982 |
| Intensified management | 207 | 872 |
| Lower retail prices | 181 | 826 |
| Easier commercial bank loans | 147 | 615 |
| Lessening of competition through mergers | 116 | 568 |
| Lower wage rates | 108 | 425 |
| Curtailment of production of natural resources | 99 | 511 |

# Lukens Warehouse at New Orleans Passes to Jones & Laughlin

JONES & LAUGHLIN STEEL CORP., Pittsburgh, has purchased the New Orleans warehouse of the Lukens Steel Co., Coatesville, Pa., located on a 17-acre site on the turning basin of the Industrial canal 6 miles from the center of New Orleans, and is taking possession immediately.

The buildings consist of a 4-bay steel structure warehouse, fabricating shop and a 2-story brick office building. Warehouses and shops are fully equipped with traveling cranes, punches, shears and other equipment and occupy more than 100,000 square feet.

Complete rail and water facilities expedite an interchange of products between river barges, railroads and ocean-going vessels. According to Jones & Laughlin officials, they will warehouse merchant bars, structural material, plates, concrete bars, cold-finished bars, junior beams, special shapes, steel pipe and wire products.

Acquisition of the Lukens warehouse at New Orleans broadens the inland river services of Jones & Laughlin, and supplements warehouses already established at Pittsburgh, Cincinnati and Memphis. With the delivery of two new steam towboats this spring the Jones & Laughlin fleet will comprise 12 towboats and 250 steel barges.

The Lukens company about 1835 began shipping iron plates from Coatesville to New Orleans via the Pennsylvania canal to Pittsburgh and thence by the Ohio and Mississippi rivers. Lukens established its first warehouse in New Orleans 35 years ago and constructed the present plant 7 years ago.

*New Jones & Laughlin Steel Corp. warehouse at New Orleans*

## Suit Filed To Restrain Action on Bethlehem Bonus

New York—Another suit has been instituted against Bethlehem Steel Corp. by minority stockholders who seek a discontinuance of the Bethlehem bonus system and an accounting for bonus payments previously made. This is an action filed in the chancery court at Newark, N. J., to enjoin ratification of the bonus system at the annual meeting of stockholders April 14. The petition alleges that the stockholders, numbering approximately 800,000, are wider scattered geographically, that most of them cannot attend the meeting, and that full information for a fair vote has not been made available. The application was to be argued March 31.

The Bethlehem corporation has filed its answer to the suit by 22 minority stockholders to compel an accounting and refunding of $36,493,000 in bonuses paid to officials since 1911. The corporation states these stockholders hold only 3500 shares, or about eight one-hundredths of 1 per cent of the outstanding stock, and that they are "not acting in good faith." The answer concedes no statements of bonus payments since

1917 have been submitted to stockholders as such disclosures "would have seriously affected the purpose which the system was designed to accomplish."

## Canada's Steel Output Is Highest Since June

Toronto, Ont.—Production of steel ingots and castings in February in Canada totaled 82,637 gross tons, the highest since June, 1930. Over the 57,598 tons of January this was an increase of 43 per cent.

February output of pig iron was 46,395 gross tons, compared with 35,592 tons in January, a gain of 30 per cent. The entire gain was made in basic iron, as foundry and malleable iron output declined.

Output of ferroalloys in Canada in February was 4006 tons, compared with 4467 tons in January.

## Water Power Capacity Up 1,000,000 Horsepower

Total capacity of water wheels at waterpower plants in the United States on Jan. 1, 1931, acording to the annual report just released by the department of interior, was 14,884,667 horsepower, an increase of 1,076,889 horsepower, or 7.2 per cent, during 1930. This increase has been exceeded only in 1929 and 1926, when the increases were 1,276,000 and 1,138,000 horsepower, respectively.

## Form Metal Trades Body

The Metal Trades Association, with headquarters at 32 Union Square, New York, has been formed by certain manufacturers of tools, dies and metal stampings and concerns slitting and spinning metals. The object is to obtain closer personal acquaintance between firms in this branch of industry. Frank D. Hutchins will be secretary.

## Ford Seeks English Works

London dispatches relate that the Ford Motor Co. is negotiating for steel plants in England, Scotland and Wales. It is believed that the company, which has been increasing its production of automobiles in Great Britain, is preparing to manufacture its own steel there in anticipation of a British tariff.

## Muck Bar Plant Resumes

American Swedo Iron Co., Danville, Pa., producer of muck bar, has opened its plant, which has been closed since July, as sufficient business has been accumulated recently to warrant resumption of activities.

# Uniform Short Haul Rates Proposed at Pittsburgh

RAILROADS serving the Pittsburgh district have prepared a revised list of freight rates on short-haul shipments of iron and steel products and were to present the new scale at a public hearing in Pittsburgh, April 2. This schedule, representing reductions from rates now in effect, is in accordance with a ruling issued Feb. 23 by the Pennsylvania public service commission and applies only on shipments up to 100 miles.

### To Submit Second Scale

The hearing was before the Central Freight association general committee and the Trunk Line Freight Traffic Managers committee. These two groups also were to submit a scale of rates similar to that ordered on short hauls from Pittsburgh, to be applied between other points in the Central Freight association and Trunk Line territories, interterritorially and intraterritorially wherever rates now are in effect based on the interstate commerce commission Docket 17,000, part 6.

### Chicago District Not Involved

These would include rates within switching districts except within the Chicago switching district and except the intrastate rates in Indiana. The former now are before the interstate commerce commission, while the latter are being considered by the public service commission of that state.

This proposal would place various steel producing centers on a similar basis as Pittsburgh as regards freight rates on shipments of iron and steel products, except cast iron pipe, on which a separate scale applies. The result would be a reduction on hauls up to 100 miles, although some increases would be incurred within switching areas. The proposed schedule calls for a charge of 3 cents per 100 pounds or 60 cents per net ton for hauls of 5 miles and under. In the Pittsburgh switching area, for example, some hauls take rates of 50 cents and 58 cents.

## Court Rules for Tutein

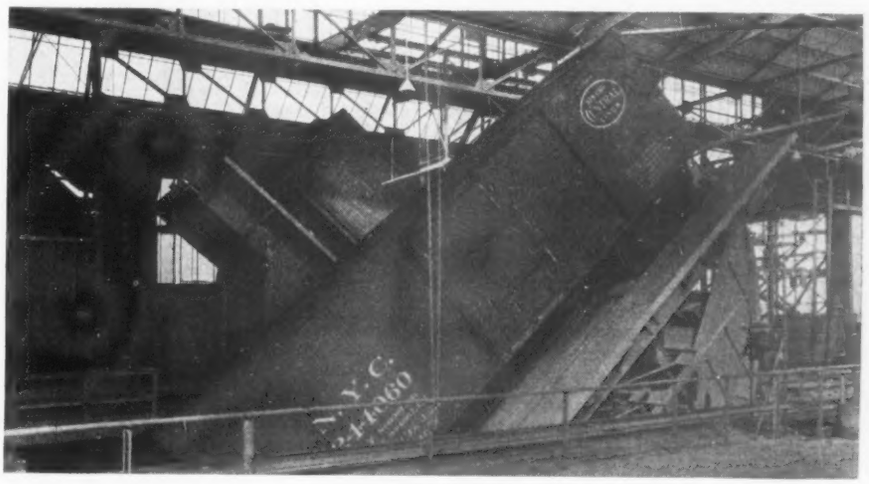
New York—E. Arthur Tutein Inc., Boston, has been awarded a verdict for $335,000 in the Court of Appeals of New York in a suit against the Hudson Valley Coke & Products Corp., Troy, N. Y. The suit involved an alleged breach of contract for the sale of pig iron and coke and has been in litigation for many months.

## Profit for National

All plants of the National Steel Corp., Pittsburgh, are operating at a profit and there have been no cuts in wages or salaries, Ernest T. Weir, chairman, told stockholders at the annual meeting in Pittsburgh, March 30. All directors were re-elected.

## Closes New York Office

Pilling & Co., Philadelphia, pig iron merchants, have closed their offices at 11 Broadway, New York.



*Freight cars loaded with grain are tilted on end like a salt-cellar in this unloader made by the Link-Belt Co. for use of the Philadelphia Grain Elevator Co., Port Richmond, Philadelphia. Steel makes such mammoth devices possible*

# February Steel Exports Steady, but Imports Shrink

WHILE the decline in iron and steel exports from the United States in February was an insignificant one at less than 1 per cent, imports of the same classification tumbled 31 per cent from the January level.

Exports were 91,212 tons, or 1533 tons less than in January. However, the average daily export movement in February was 3258 tons, well in excess of the January average of only 2992 tons. Imports during the month aggregated but 28,045 tons, a decline of 12,736 tons from the prior month, according to the iron and steel division, bureau of foreign and domestic commerce.

**IMPORTS AND EXPORTS**
**Gross Tons**

| | 1931 | | 1930 | |
|---|---|---|---|---|
| | Imports | Exports | Imports | Exports |
| Jan. | 40,781 | 92,745 | 43,624 | 223,766 |
| Feb. | 28,045 | 91,212 | 43,326 | 197,336 |
| 2 mos. | 68,826 | 183,957 | 87,050 | 421,102 |
| March | ..... | ..... | 56,618 | 238,333 |
| April | ..... | ..... | 53,686 | 208,640 |
| May | ..... | ..... | 54,315 | 196,120 |
| June | ..... | ..... | 48,955 | 159,392 |
| July | ..... | ..... | 39,700 | 131,772 |
| Aug. | ..... | ..... | 35,387 | 151,235 |
| Sept. | ..... | ..... | 40,285 | 131,211 |
| Oct. | ..... | ..... | 38,344 | 131,850 |
| Nov. | ..... | ..... | 43,095 | 111,968 |
| Dec. | ..... | ..... | 40,754 | 101,988 |
| Total | ..... | ..... | 538,089 | 1,983,611 |

**ORIGIN OF FEBRUARY IMPORTS**
**Gross Tons**

| | Steel Ingots, Blooms | Steel Scrap | Cast Iron Pipe | Steel Bars |
|---|---|---|---|---|
| Austria | ..... | ..... | ..... | 4 |
| Belgium | 1,725 | ..... | ..... | 1,515 |
| Czechoslovakia | ..... | ..... | ..... | 7 |
| Canada | ..... | 415 | 3 | ..... |
| Finland | ..... | ..... | ..... | 13 |
| France | 5 | ..... | ..... | 576 |
| Germany | 95 | ..... | ..... | 986 |
| Netherlands | ..... | ..... | ..... | 124 |
| Sweden | 94 | ..... | ..... | 165 |
| United King. | 48 | ..... | ..... | 42 |
| Total | 1,967 | 415 | 3 | 3,432 |

Despite the increase in the average daily movement just noted the trend in the export trade continues to be downward, with only 19 of the 46 classes showing increases. The principal gain registered during the month took place in the trade in heavy rails, 3869 tons, with other outstanding increases being shown in plates, 3465 tons; scrap, 1296 tons; and steel bars, 1267 tons. Most of the instances of reduced shipments were in small amounts, the largest being those in skelp, 3013 tons; casing and oil line pipe, 1807 tons; and welded steel pipe exports, 1082 tons.

Exports to North and Central America, Europe and to the Far East all increased in February. The trade with the first named area made up 58.8 per cent of the month's total shipments against 56.4 per cent over the elapsed period of 1931 to date, while that with South America equalled only 13.8 per cent (18.3 per cent), that with Europe 6.4 per cent (6.2 per cent), that with the Far East 20.3 per cent (18.0 per cent).

Shipments to Canada totalled 45,081 tons and included 8174 tons of scrap, 7797 tons of fabricated shapes and 5142 tons of plates.

**IMPORTS OR IRON AND STEEL PRODUCTS**
**Gross Tons**

| | Feb. 1931 | Jan. 1931 | Feb. 1930 |
|---|---|---|---|
| Pig iron | 3,456 | 11,141 | 8,215 |
| Sponge iron | 107 | 101 | |
| Ferromanganese, spiegeleisen(1) | 2,497 | 2,783 | 5,815 |
| Ferrochrome(2) | ..... | ..... | 42 |
| Ferrosilicon(3) | 38 | 270 | 335 |
| Scrap | 415 | 1,714 | 1,642 |
| Ingots, blooms | 1,967 | 2,253 | 1,770 |
| Concrete bars | 3,110 | 2,937 | 3,360 |
| Hollow bar, drill steel | 67 | 78 | |
| Merch. steel bars | 3,432 | 4,287 | |
| Iron slabs | ..... | ..... | |
| Iron bars | 34 | 209 | 111 |
| Wire rods | 1,038 | 584 | 1,115 |
| Boiler, other plate | 27 | 56 | 365 |
| Sheets, skelp | 2,087 | 1,167 | 936 |
| Tin plate | 4 | 21 | 13 |
| Structural shapes | 4,341 | 6,779 | 12,382 |
| Sheet piling | 90 | ..... | |
| Rails, fastenings | 450 | 299 | 98 |
| Cast pipe, fittings | 3 | 726 | 2,049 |
| Welded pipe | 305 | 279 | 398 |
| Other pipe | 1,280 | 1,584 | 1,221 |
| Barbed wire | 403 | 629 | 695 |
| Round wire | 389 | 174 | 275 |
| Flat wire, strip | 63 | 44 | 100 |
| Wire rope, strand | 89 | 156 | 155 |
| Other wire | 73 | 60 | 21 |
| Hoops and bands | 1,248 | 1,559 | 1,731 |
| Nails and tacks | 625 | 584 | 274 |
| Bolts, nuts, rivets | 92 | 141 | 49 |
| Castings, forgings | 162 | 125 | 160 |
| Total | 28,045 | 40,781 | 43,326 |

(1) Manganese content. (2) Chromium content. (3) Silicon content.

**DESTINATION OF FEBRUARY IRON AND STEEL EXPORTS**
**Gross Tons**

| | Galvan. Steel Sheets | Tin, Terne Plate | Black Sheets | Steel Bars |
|---|---|---|---|---|
| Argentina | 16 | 735 | 418 | 61 |
| Brazil | 413 | 597 | 57 | 45 |
| Canada | 589 | 196 | 3,726 | 2,905 |
| Cent. America | 190 | ..... | 4 | 61 |
| Chile | 5 | 311 | 514 | 284 |
| China | 375 | 888 | 218 | 30 |
| Columbia | 149 | 311 | 27 | 103 |
| Cuba | 315 | 202 | 8 | 24 |
| Dutch E. Ind. | 28 | ..... | ..... | ..... |
| Finland | 2 | ..... | ..... | ..... |
| France | ..... | ..... | 1,478 | ..... |
| Greece | ..... | 97 | ..... | ..... |
| Italy | 5 | 164 | 291 | ..... |
| Japan | 2 | 1,268 | 83 | 26 |
| Java | 91 | ..... | 2 | ..... |
| Mexico | 180 | 855 | 104 | 20 |
| Norway | 65 | ..... | ..... | 14 |
| Panama | 114 | ..... | 2 | 718 |
| Philippines | 302 | 226 | ..... | 30 |
| Peru | 180 | 533 | 117 | 30 |
| Russia | ..... | ..... | ..... | ..... |
| Turkey | ..... | ..... | ..... | ..... |
| United King. | 4 | ..... | 346 | 760 |
| Uruguay | 41 | 469 | 11 | ..... |
| Venezuela | 38 | 10 | ..... | 17 |
| Total | 3,219 | 7,752 | 7,447 | 5,190 |

**ORIGIN OF FEBRUARY IMPORTS**
**Gross Tons**

| | Iron Ore | Pig Iron | Manganese | Ferromanganese |
|---|---|---|---|---|
| Australia | ..... | 53 | ..... | ..... |
| Brazil | ..... | ..... | 2,512 | ..... |
| Brit. India | ..... | 3,303 | 1,040 | ..... |
| Brit. S. Af. | ..... | ..... | 2,602 | ..... |
| Canada | ..... | ..... | ..... | 1,565 |
| Chile | 64,466 | ..... | ..... | ..... |
| Gold Coast | ..... | ..... | 3,352 | ..... |
| Italy | ..... | ..... | ..... | 25 |
| Mexico | 113 | ..... | ..... | ..... |
| Netherlands | ..... | 50 | ..... | ..... |
| Russia | 15,050 | ..... | ..... | ..... |
| Spain | 7,870 | ..... | ..... | ..... |
| Sweden | 6,990 | ..... | ..... | ..... |
| United King. | 40 | 50 | ..... | 907 |
| Total | 94,529 | 3,456 | 9,506 | 2,497 |

**EXPORTS OF IRON AND STEEL PRODUCTS**
**Gross Tons**

| | Feb., 1931 | Jan., 1931 | Feb., 1930 |
|---|---|---|---|
| Pig iron | 606 | 419 | 1,897 |
| Ferromanganese, spiegeleisen | 13 | ..... | 83 |
| Scrap (including tin plate scrap) | 10,690 | 9,394 | 43,779 |
| Ingots, blooms | 503 | 600 | 3,021 |
| Bars, iron | 124 | 44 | 170 |
| Bars, steel | 5,190 | 3,923 | 8,025 |
| Bars, alloy steel | 768 | 433 | 474 |
| Wire rods | 3,363 | 3,248 | 4,373 |
| Boiler plate, not fabr. | 5,571 | 2,106 | 10,827 |
| Skelp | 4,944 | 7,957 | 5,080 |
| Iron sheets, galv. | 435 | 717 | 638 |
| Steel sheets, galv. | 3,219 | 4,036 | 7,058 |
| Steel sheets, black | 7,447 | 7,691 | 11,943 |
| Iron sheets, black | 527 | 713 | 979 |
| Hoops, bands, strip | 3,797 | 3,448 | 5,121 |
| Tin, terneplate | 7,752 | 6,780 | 22,857 |
| Shapes, not fabr. | 8,514 | 9,334 | 15,265 |
| Shapes, fabr. | 3,549 | 4,494 | 4,703 |
| Metal lath | 166 | 186 | 378 |
| Rails | 5,133 | 1,264 | 6,844 |
| Rail fastenings | 446 | 503 | 1,237 |
| Boiler tubes | 661 | 769 | 1,784 |
| Casing and pipe, seamless and welded | 2,321 | 4,128 | 7,175 |
| Malleable screwed pipe fittings | 586 | 682 | 1,259 |
| Cast-iron screwed pipe fittings | 477 | 425 | 550 |
| Cast-iron pressure pipe, fittings | 1,152 | 883 | 1,080 |
| Cast iron soil pipe and fittings | 584 | 1,210 | 1,343 |
| Welded black, galv. steel pipe | 3,621 | 4,703 | 7,364 |
| Welded black, gal. wrought pipe | 193 | 721 | 1,756 |
| Plain black or galv. wire | 1,162 | 1,508 | 2,083 |
| Barbed wire, woven-wire fencing | 2,179 | 2,767 | 2,884 |
| Woven-wire screen cloth | 99 | 65 | 144 |
| Wire rope | 276 | 248 | 568 |
| Insulated wire, cable | 33 | 65 | 78 |
| Other wire | 471 | 395 | 797 |
| Wire nails | 561 | 978 | 532 |
| Tacks | 35 | 37 | 26 |
| Bolts, nuts, rivets | 434 | 505 | 1,245 |
| Iron castings | 651 | 397 | 811 |
| Steel castings | 718 | 433 | 442 |
| Car wheels, axles | 234 | 975 | 1,049 |
| Forgings | 806 | 790 | 1,127 |
| Total | 91,212 | 92,745 | 197,225 |

# Pig Iron Output in 1930 Lowest Since 1924

PRODUCTION of pig iron and ferroalloys in the United States in 1930 decreased 25.49 per cent from the record production of 1929 and wiped out the growth of six years, as it is necessary to go back to 1924 to find a smaller output than in 1930.

Total tonnage turned out in 1930 was 31,752,169 gross tons, compared with 42,613,983 gross tons in 1929, according to figures just promulgated by the American Iron and Steel institute. Production in 1924 was 31,405,790 tons.

**Smaller Decrease in Ferroalloys**

The 1930 total was made up of 31,020,907 tons of pig iron and 731,262 tons of ferroalloys, compared with 41,757,215 tons of pig iron and 856,768 tons of ferroalloys in 1929. The decrease in pig iron was 10,736,308 tons, 25.71 per cent; in ferroalloys the decrease was 125,506 tons, 14.65 per cent. Details of tonnages by grades and changes from 1929 by percentages are given in the accompanying table.

Pennsylvania produced 9,967,618 tons, 32.13 per cent of the total; Ohio made 6,688,658 tons, 21.56 per cent; Indiana and Michigan, 3,934,212 tons, 12.68 per cent; Illinois, 3,344,631 tons, 10.78 per cent; Alabama, 2,382,221 tons, 7.68 per cent, Massachusetts and New York, 2,008,812 tons, 6.48 per cent. Compared with 1929 Pennsylvania tonnage declined 28.88 per cent, Ohio 31.06 per cent, Indiana and Michigan, 22.64 per cent, Illinois, 23.25 per cent, Alabama, 11.92 per cent and Massachusetts and New York 28.38 per cent.

**Change in Proportion Slight**

Of the total production of pig iron and ferroalloys, 7,082,635 tons was made for sale and 24,669,534 tons for makers' use. This represented a proportion of 22.3 per cent merchant and 77.7 nonmerchant. Corresponding figures in 1929 were 22.6 per cent merchant and 77.4 per cent nonmerchant.

On the basis of fuel used 30,924,327 tons was made with coke and 96,580 tons with charcoal. The 731,262 tons of ferroalloys was not classified as to fuel used but represents all ferroalloys made in blast furnaces or electric furnaces.

## Gray Iron Foundry Group Makes Encouraging Gains

February reports of members to the Gray Iron institute, Cleveland, reveal the first increase in eight months in production, new business and unfilled orders.

Production, as reported by 162 foundries, is up three points to 55.3 per cent of normal, which is the average monthly output during the past three calendar years. New business at 52.2 per cent gained one point; unfilled orders at 38.8 increased four points; material received and material on hand showed declines.

One hundred and thirty-three foundries found February business outlook good, compared with one foundry of the same opinion in January; 52 interests saw business fair, only 43 were committed to this opinion in January. Those whose business is poor were in about the same number both months; those with a bad business outlook increased slightly during the month of February.

## Steel Barrel Shipment in February Improvement

Total daily productive capacity for I. C. C. and light barrels combined was 45,350 units in February and percentage used during the month was 26.8. This compares with figures of 38,300 and 27.2, respectively, in January, according to the Steel Barrel

PRODUCTION OF PIG IRON BY GRADES AND FERRO-ALLOYS BY KINDS, 1929–1930, SHOWING INCREASE OR DECREASE.

| Grades of pig iron and kinds of ferro-alloys. | 1930. | Per cent. | 1929. | Per cent. | Decrease. | Per cent. |
|---|---|---|---|---|---|---|
| Pig iron: | | | | | | |
| Basic | 18,393,384 | 59.29 | 24,911,654 | 59.66 | 6,518,270 | 26.17 |
| Bessemer and low-phosphorus | 7,314,749 | 23.58 | 9,877,240 | 23.65 | 2,562,491 | 25.94 |
| Foundry | 3,622,779 | 11.68 | 4,446,011 | 10.65 | 823,232 | 18.52 |
| Malleable | 1,571,512 | 5.07 | 2,312,813 | 5.54 | 741,301 | 32.05 |
| Forge | 50,696 | .16 | 167,930 | .40 | 117,234 | 69.81 |
| All other pig iron | 67,787 | .22 | 41,567 | .10 | *26,220 | *63.08 |
| Total pig iron | 31,020,907 | 100.00 | 41,757,215 | 100.00 | 10,736,308 | 25.71 |
| Ferro-alloys: | | | | | | |
| Ferro-manganese / Spiegeleisen | 362,386 | 49.56 | 476,655 | 55.63 | 114,269 | 23.97 |
| Ferro-silicon | 337,640 | 46.17 | 341,222 | 39.83 | 3,582 | 1.05 |
| All other ferro-alloys | 31,236 | 4.27 | 38,891 | 4.54 | 7,655 | 19.68 |
| Total ferro-alloys | 731,262 | 100.00 | 856,768 | 100.00 | 125,506 | 14.65 |
| Grand total | 31,752,169 | ..... | 42,613,983 | ..... | 10,861,814 | 25.49 |

*Increase.

PIG IRON AND FERRO-ALLOYS MADE FOR SALE OR FOR USE OF MAKERS IN 1930.

| Pig iron and ferro-alloys. | For sale. | For maker's use. | Total. Gross tons. |
|---|---|---|---|
| Pig iron: | | | |
| Basic | 1,597,474 | 16,795,910 | 18,393,384 |
| Bessemer and low-phosphorus | 323,963 | 6,990,786 | 7,314,749 |
| Foundry | 3,133,034 | 489,745 | 3,622,779 |
| Malleable | 1,432,241 | 139,271 | 1,571,512 |
| Forge or mill | 39,147 | 11,549 | 50,696 |
| White and mottled, direct castings, etc. | 41,560 | 26,227 | 67,787 |
| Total pig iron ..... Gross tons. | 6,567,419 | 24,453,488 | 31,020,907 |
| Ferro-alloys: | | | |
| Ferro-manganese and spiegeleisen | 146,383 | 216,003 | 362,386 |
| Ferro-silicon | 337,640 | ..... | 337,640 |
| All other ferro-alloys | 31,193 | 43 | 31,236 |
| Total ferro-alloys ..... Gross tons. | 515,216 | 216,046 | 731,262 |
| Total pig iron and ferro-alloys ... G. T. | 7,082,635 | 24,669,534 | 31,752,169 |

PRODUCTION OF COLD, HOT, AND WARM BLAST CHARCOAL PIG IRON, GROSS TONS, 1926–1930.

| Kinds of pig iron. | 1926. | 1927. | 1928. | 1929. | 1930. |
|---|---|---|---|---|---|
| Cold blast | 400 | ..... | ..... | ..... | ..... |
| Hot and warm blast | 163,480 | 164,569 | 142,960 | 138,193 | 96,580 |
| Total ..... Gross tons. | 163,880 | 164,569 | 142,960 | 138,193 | 96,580 |

Manufacturers' association, Cleveland.

Total shipments in February were 271,788 barrels, against January's 247,045 units. Unfilled orders Feb. 1 were 575,990 barrels; on Jan. 1 this figure was 589,671.

## Orders for Steel Furniture Fail to Continue Upward

Orders in the business group for steel furniture in February at $1,507,768 were off from January's figure of $1,798,140. Shipments also failed to compare favorably with January. New orders for shelving in February held constant but shipments declined. Following by the department of commerce represents totals for most of the industry:

| | Business Group | | Shelving | |
|---|---|---|---|---|
| | New orders | Shipments | New orders | Shipments |
| | (In Dollars, 000 omitted) | | | |
| 1930 | | | | |
| Feb. | 2,370 | 2,549 | 758 | 682 |
| (2 mos.) | 5,256 | 5,440 | 1,484 | 1,358 |
| March | 2,627 | 2,726 | 839 | 812 |
| April | 2,523 | 2,427 | 796 | 814 |
| May | 2,310 | 2,342 | 725 | 751 |
| June | 2,006 | 2,168 | 699 | 705 |
| July | 1,840 | 1,811 | 596 | 604 |
| Aug. | 1,788 | 1,985 | 526 | 555 |
| Sept. | 1,795 | 1,879 | 512 | 497 |
| Oct. | 1,855 | 1,901 | 534 | 593 |
| Nov. | 1,637 | 1,673 | 429 | 458 |
| Dec. | 1,565 | 1,800 | 242 | 468 |
| (Year) | 25,204 | 26,154 | 7,382 | 7,615 |
| 1931 | | | | |
| Jan. | 1,798 | 1,797 | 376 | 393 |
| Feb. | 1,508 | 1,598 | 375 | 356 |
| (2 mos.) | 3,306 | 3,396 | 750 | 748 |

## Truck Shipment Improves

Shipments of electrical trucks and tractors in February consisted of 56 units, compared with 38 in January and 113 in February, 1930, according to the department of commerce from report of ten leading manufacturers:

| | | Shipment | |
|---|---|---|---|
| 1930 | Total | Domestic | Export |
| February | 113 | 106 | 7 |
| March | 123 | 109 | 14 |
| April | 106 | 101 | 5 |
| May | 144 | 125 | 19 |
| June | 95 | 63 | 32 |
| July | 108 | 99 | 9 |
| August | 92 | 81 | 11 |
| September | 81 | 75 | 6 |
| October | 93 | 90 | 3 |
| November | 45 | 36 | 9 |
| December | 51 | 42 | 9 |
| (Year) | 1,191 | 1,050 | 141 |
| 1931 | | | |
| January | 38 | 33 | 5 |
| February | 56 | 50 | 6 |
| (Two months) | 94 | 83 | 11 |

## Babbitt Fails to Hold Gain

Declines in sales and production of babbitt metal for consumers' own use reflect a decline in total production for February, which failed to hold January's improvement over December. Manufacturers report the following compilation to the department of commerce:

In Pounds

| 1930 | (a) Total production | (b) Sales | (c) Production for own use |
|---|---|---|---|
| Feb. | 3,930,516 | 2,997,711 | 932,805 |
| (2 mos.) | 8,527,536 | 6,582,231 | 1,945,305 |
| March | 5,429,440 | 4,402,000 | 1,027,440 |
| April | 4,036,260 | 2,994,023 | 1,042,237 |
| May | 4,072,853 | 3,139,884 | 932,969 |
| June | 3,912,744 | 2,742,435 | 1,170,309 |
| July | 3,060,962 | 2,160,505 | 900,457 |
| Aug. | 2,918,043 | 1,964,213 | 953,830 |
| Sept. | 8,892,287 | 1,850,468 | 1,041,819 |
| Oct. | 3,101,187 | 2,068,544 | 1,032,643 |
| Nov. | 2,695,087 | 1,904,256 | 790,831 |
| Dec. | 2,106,522 | 1,459,208 | 647,314 |
| (Year) | 42,752,921 | 31,267,767 | 11,485,154 |
| 1931 | | | |
| Jan.* | 2,855,693 | 2,089,574 | 766,119 |
| Feb. | 2,507,222 | 1,819,749 | 687,473 |
| (2 mos.) | 5,362,915 | 3,909,323 | 1,453,592 |

(a) By 43 reporting establishments.

(b) By 33 manufacturers who produce for sale, including 5 who also report consumption of their own metal.

(c) By 15 establishments which manufacture their own metal, including 5 which also produce for sale.

*Revised.

## Enameled Sheet Metal Shipments Improve

January shipments of enameled sheet metal ware increased from the low for 1930 set in December. Gains were recorded not only in the total but also in the white, gray and colored classifications. Department of commerce monthly tabulation follows, compiled from reports by 80 per cent of the industry:

In Dozens

| | Total | White | Gray and Colored |
|---|---|---|---|
| 1930 | | | |
| Jan. | 332,146 | 110,758 | 221,388 |
| Feb. | 331,915 | 120,523 | 211,392 |
| March | 341,372 | 124,856 | 216,516 |
| April | 318,431 | 124,562 | 193,869 |
| May | 290,617 | 114,709 | 175,908 |
| June | 247,861 | 90,151 | 157,710 |
| July | 213,420 | 70,718 | 142,702 |
| Aug. | 309,645 | 89,259 | 220,386 |
| Sept. | 297,622 | 97,262 | 200,360 |
| Oct. | 329,337 | 107,553 | 221,784 |
| Nov. | 263,365 | 79,719 | 183,646 |
| Dec. | 250,568 | 70,554 | 180,014 |
| (Year) | 3,526,299 | 1,200,624 | 2,325,675 |
| 1931 | | | |
| Jan. | 267,232 | 84,917 | 182,315 |

## Boiler Orders Again Off

New orders for 516 steel boilers were placed in February, comparing with January's 598 units. The former aggregated 576,723 square feet; the latter 622,343 square feet. Thus far in 1931 orders for the two months have totaled 1114 units of 1,199,066 square feet in comparison with 1930 when over the same two months orders were 1815 boilers of 2,020,655 square feet. Reports are from 74 manufacturers comprising the leading establishments in the industry to the department of commerce.

## Malleable Castings Continue to Show Betterment

Production rose three points in February in malleable castings plants, according to average of the majority of the industry in 115 plants reporting to the department of commerce. Shipments were up in February, though new orders remained constant, as the following shows:

| | Output, tons | Shipments, tons | Orders booked, tons | Per cent operated |
|---|---|---|---|---|
| 1930 | | | | |
| Feb. | 65,942 | 59,971 | 61,606 | 67.4 |
| (2 mos.) | 127,323 | 117,791 | 119,615 | 64.4 |
| March | 63,464 | 65,164 | 60,915 | 64.6 |
| April | 61,984 | 60,875 | 54,625 | 63.1 |
| May | 53,502 | 55,656 | 47,022 | 53.8 |
| June | 39,347 | 43,937 | 33,865 | 40.3 |
| July | 30,911 | 32,656 | 30,068 | 31.0 |
| Aug. | 25,614 | 31,845 | 25,409 | 26.2 |
| Sept. | 26,528 | 29,223 | 26,251 | 27.2 |
| Oct. | 28,785 | 29,206 | 24,171 | 29.0 |
| Nov. | 27,114 | 25,974 | 27,451 | 27.8 |
| Dec. | 30,431 | 27,474 | 26,433 | 31.1 |
| (Yr.) | 515,003 | 519,801 | 475,925 | 43.6 |
| 1931 | | | | |
| Jan.* | 31,384 | 31,656 | 32,658 | 31.6 |
| Feb.** | 33,251 | 32,511 | 32,279 | 34.1 |
| (2 mos.)** | 64,635 | 64,167 | 64,937 | 32.8 |

*Revised. **Preliminary.

## Steel Castings Continue Downward Order Trend

Steel castings bookings dropped to a low for 1930 and for 1931 to date when in February orders were placed for 40,062 tons, according to 131 reporting establishments to the department of commerce and representing over four-fifths of the commercial castings capacity of the industry:

| 1930 | Total bookings tons | Per cent of capacity | Total production tons | Per cent of capacity |
|---|---|---|---|---|
| Feb. | 114,419 | 79.2 | 107,628 | 74.6 |
| (2 mos.) | 215,919 | 74.8 | 216,637 | 75.1 |
| March | 122,462 | 84.9 | 113,465 | 78.6 |
| April | 92,987 | 64.4 | 110,692 | 76.7 |
| May | 91,077 | 63.1 | 104,984 | 72.8 |
| June | 61,164 | 42.4 | 90,795 | 62.9 |
| July | 57,850 | 40.1 | 78,977 | 54.7 |
| Aug. | 50,370 | 34.9 | 64,303 | 44.6 |
| Sept. | 49,542 | 34.3 | 61,919 | 42.9 |
| Oct. | 45,552 | 31.6 | 59,522 | 41.2 |
| Nov. | 48,123 | 33.3 | 44,290 | 30.7 |
| Dec. | 49,387 | 34.2 | 46,290 | 32.1 |
| (Year) | 884,433 | 51.1 | 991,872 | 57.3 |
| 1931 | | | | |
| Jan.* | 46,635 | 32.0 | 46,160 | 31.7 |
| Feb. | 40,062 | 27.5 | 49,313 | 33.9 |
| (2 mos.) | 239,952 | 29.8 | 95,473 | 32.8 |

*Revised.

# Industrial Men in the Day's News

## J. H. Nead, Chief Metallurgist, Inland Steel Co., Chicago

APPROXIMATELY 22 years experience in metallurgy with private companies and with the government furnish the background of his career.

SYRACUSE, N. Y., Minneapolis, Watertown, N. Y., France, and since 1919, Middletown, O., have been his locations since college.

NOW at Chicago he will direct all metallurgical, chemical and research activity of the Inland Steel Co.

BECAUSE metallurgy, chemistry and research have become the inseparable companions of modern day steel production, especially of the new alloy steels which daily are coming into more common use and prominent display, John Hunter Nead, who on April 1 became chief metallurgist for Inland Steel Co., Chicago, will undoubtedly be a valuable acquisition. He brings to his new connection a liberal fund of practical experience gained over a period of about 22 years. Latterly he has been chief metallurgist for the American Rolling Mill Co., Middletown, O. He now will direct all of the Inland company's metallurgical, chemical and research activities at Indiana Harbor, Ind., and elsewhere.

Born in Kansas City, Mo., March 10, 1887, Mr. Nead was graduated in 1909 from the University of Michigan with a bachelor of science degree in chemical engineering. He specialized in metallurgy at college. For the first nine years after graduation he acquired an experience both varied and broad as metallurgist for several different companies, including the H. H. Franklin Mfg. Co., Syracuse, N. Y., from which he resigned to become metallurgical engineer for the Minneapolis Steel & Machinery Co., Minneapolis. He later was metallurgist and engineer of tests at the Watertown arsenal of the United States government and during the World war, from 1918 to 1919, was captain in the engineering division of the ordnance department, serving approximately nine months overseas. He thus gained considerable experience in and knowledge of French steel works operations and metallurgical practices.

He became affiliated with American Rolling Mill Co. as chief metallurgist in September 1919, soon after his discharge from military service. In that capacity he remained until April 1, 1931, when he resigned to go with the Inland company.

Mr. Nead is a member of the American Society for Steel Treating, which he served as director, 1927-1928, American Institute of Mining and Metallurgical Engineers, Society of Automotive Engineers, British Iron and Steel institute, and British Institute of Metals, as well as several clubs. He has been granted numerous patents and is author of many technical papers.

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A. J. MC FARLAND, who as noted in STEEL of Nov. 20, 1930, resigned as general manager of Follansbee Bros. Co., Follansbee, W. Va., to become vice president of Wheeling Steel Corp., Wheeling, Va., was on March 25 confirmed to that office and also appointed assistant to William M. Holloway, president.

John L. Neudoerfer, general manager of sales since May, 1929, was also made a vice president at the March 25 meeting, as was Thomas H. Jones, who will also head the accounting department.

Other officers re-elected at the meeting are: Alexander Glass, chairman, Alan H. Woodward, vice chairman, William M. Holloway, president; J. Earl Montgomery, vice president; William H. Manning, treasurer; Howard P. Beswick, secretary; and Rhodes D. Swinburne, comptroller.

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W. C. Witt, since 1921 Chicago branch sales manager of Lakeside Bridge & Steel Co., Milwaukee, has been appointed general sales manager for A. C. Woods & Co., Rockford, Ill., structural steel fabricator. Mr. Witt acquired his higher education in engineering at Marquette college, Northwestern university and Lewis institute. Following college he became engineer for Wisconsin Bridge & Iron Co., Milwaukee, where he remained ten years. About 13 years ago he became affiliated with Lakeside Bridge & Steel Co. The first three years he was mechanical and erection engineer but about ten years ago he was appointed sales manager at Chicago.

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Arnold S. Durrant, for the past six year vice president in charge of commercial relations of International General Electric Co. Inc., subsidiary of General Electric Co., Schenectady, N. Y., retired recently. He has been

made an honorary vice president of the company, having been identified with the General Electric organization for 40 years.

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F. C. Dierks, secretary of Fairbanks, Morse & Co., Chicago, has been elected a director. W. E. Miller and F. M. Boughey resigned from the board.

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R. W. Appleton, formerly director of purchases of Pierce Arrow Motor Car Co., Buffalo, has been appointed purchasing agent of Morse Chain Co., Ithaca, N. Y., and Detroit, subsidiary of Borg-Warner Corp.

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R. G. Wise, formerly with Industrial Machine Works, Wichita, Kans., has established the R. G. Wise Machine Works, 509 South St. Francis street, Wichita, to specialize in oil field core drill work.

□ □ □

H. E. Rose, for the past four years identified with Weaver Bros. Co., Adrian, Mich., has established headquarters at 11902 Phillips avenue, Cleveland, as manufacturers' agent, specializing in metal pickling lines.

□ □ □

Frank Farrell has resigned as assistant general superintendent of Steel & Tubes Inc., subsidiary of Republic Steel Corp., Youngstown, O., with which he has been identified for about a year. He formerly was general superintendent of Campbell works of Youngstown Sheet & Tube Co., Youngstown.

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Frank M. Brinckerhoff has been appointed consulting engineer to cooperate with the committee on research in freight car design of the American Railway Car institute, 61 Broadway, New York. Mr. Brinckerhoff has been an associate of L. B. Stillwell, consulting engineer, of that city, for 20 years, specializing in car design.

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W. Roy Moore, identified with the Billings & Spencer Co., Hartford, Conn., forgings and forging machinery, for the past 17 years, has been promoted to general manager. He started as assistant purchasing agent, was made purchasing agent, then assistant sales manager and for some time has been general sales manager.

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G. L. Crawford, in charge of Clinton electric welded fabric sales in the Tulsa, Okla., territory, covering Oklahoma, Kansas, Texas, Arkansas, Louisiana, Mississippi and New Mexico, for Wickwire Spencer Sales Corp., subsidiary of Wickwire Spencer Steel Co. Inc., New York, has been transferred to the Chicago district. He has been succeeded by J. M. Mercer in Tulsa.

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G. R. Rabel, formerly secretary-treasurer of Star Machinery Co., Seattle, was elected president at a special meeting of the board of trustees to succeed Christian Rabel, whose death was noted in STEEL of Feb. 12.

V. E. Rabel, vice president of the company, was also made treasurer and I. B. Rabel is now secretary.

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J. A. Miller Jr., formerly general manager of sales of the Vanadium Corp. of America, New York, has been appointed assistant to the president. He will be located at Pittsburgh.

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Glenn Merrefield has resigned as foundry superintendent of Clark Equipment Co., Buchanan, Mich., to become identified in a similar capacity with Pettibone-Mulliken Co., Chicago, operating a steel foundry.

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Edward C. Bullard, vice president and director of the Bullard Co., Bridgeport, Conn., has been appointed general manager as well, succeeding his uncle, whose death was noted in STEEL of March 26.

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Oliver F. Gang was recently appointed assistant sales manager of William Powell Co. of Cincinnati. He has been associated with the valve industry for twelve years and recently resigned from the Lunkenheimer Co., New York.

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W. N. Crout, identified for some time with the Cleveland office of American Rolling Mill Co., Middletown, O., has been placed in charge of the branch office established at 1120 Midland Bank building, Cleveland, of Armco Railroad Sales Co., Middletown, a subsidiary of American Rolling Mill Co.

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L. C. Wilson, formerly assistant plants manager, American Chain Co. Inc., York division, York, Pa., has been appointed plant manager, Reading Steel Casting Co., Reading, Pa., to succeed the late Ray J. Doty. Prior to his American Chain connection, Mr. Wilson served as vice president of Federal Malleable Co., Milwaukee, and as assistant to the president of Interstate Iron & Steel Co., Chicago. He was graduated from Sheffield Scientific school, Yale university, in 1907. Following a number of years in the sales department of Harbison-Walker Refractories Co., Pittsburgh, he became identified with Chain Belt Co., Milwaukee, as assistant to the vice president. He later became general sales manager. He then became associated with Federal Malleable Co. as secretary, later being elected vice president and general manager.

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Emerson D. McNeil has resigned as superintendent of iron mines, Bessemer, Mich., for Corrigan, McKinney Steel Co., Cleveland. For a time Mr. McNeil worked for Corrigan-McKinney at Negaunee, Mich. 35 years ago he and Capt. Edward Jacka opened the Crystal Falls,

*(Concluded on Page 74)*

# The Business Week In Washington

FURTHER conferences have been held by executives of eastern railroads involved in the four trunk line merger proposal, at which representatives of unionized railroad employes were present. It will be several weeks, it is understood, before the consolidation plan will be formally placed before the interstate commerce commission. Probably the most delicate adjustment, that of granting the Pennsylvania railroad trackage rights over the Nickel plate railroad between Cleveland and Buffalo, has been referred to an arbiter.

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An investigation into the cost of production, both here and abroad, of silicon aluminum silicon, alsimon, ferrosilicon aluminum, and ferro-aluminum silicon has been begun by the United States tariff commission.

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The department of commerce has begun the organization of the new federal employment stabilization board as charged by the President The board will take up advance planning of public construction.

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Nearly 100,000 aliens have been kept out of the United States through application of the immigration law section of "likely to become a public charge," which has been invoked by the President, it is announced at the White House.

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Ethelbert Stewart, commissioner of labor statistics, department of labor, is predicting a large net gain in the number of industrial establishments operating on a five-day week following the business depression.

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Representative Williamson, of South Dakota, chairman of the house committee on expenditures, says that his committee will take up at the next session of congress the advisability of abolishing the United States shipping board and the Merchant Fleet Corporation as well as consolidating a number of government bureaus.

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Alfred P. Thom, general counsel for Association of Railway Executives, appearing at the hearing of the interstate commerce commission in the motor bus investigation stated that fair competition between the railways and motor buses "cannot be brought about so long as the federal government permits the motor carriers to indulge in rebates and to make unjust discriminations in the matters of rates, service and practices.

# Obituaries

BEVERLY LYON WORDEN, 61, president of Cutler-Hammer Mfg. Co., New York and Milwaukee, died March 28 at his West Orange, N. J., home. Born in Chicago, Mr. Worden was graduated in 1893 from the University of Wisconsin with a B. S. degree in civil engineering. In 1901 he founded the Worden-Allen Co., Milwaukee, structural steel fabricator, of which he remained president until 1921. In 1909 he also established Lackawanna Bridge Co., Buffalo, continuing as president until 1924. He also was president of Ferguson Steel & Iron Co., Buffalo, for about five years. Dur-

**Beverly L. Worden**

ing the World war Mr. Worden was general manager of the shipyard at Newark, N. J., of Submarine Boat Corp. He became interested in the Beaver Board Co., and after a period as president he retired and was elected board chairman. Early in 1923 he was elected vice president of Cutler-Hammer Mfg. Co., to succeed A. W. Berresford, resigned, and in July, 1924, was elected president.

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W. H. Cavnah, secretary-treasurer of Canton Foundry & Machine Co., Canton, O., died March 20.

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Oliver Evans, 50, production manager for the Standard Tin Plate Co., Canonsburg, Pa., died March 22.

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William M. Scaife, 64, president of Air Tight Steel Tank Co., Pittsburgh, died March 26 in Sewickley, Pa.

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John H. Iwan, 89, senior partner for 54 years of Iwan Bros., South Bend, Ind., manufacturers of tools, augurs, post hole diggers, etc., died March 13.

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John H. Short, 50, secretary, Garland Mfg. Co., Pittsburgh, electrical conduit, died March 17.

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Daniel J. Kilby, 60, co-founder with his father of the Kilby Mfg. Co., Cleveland, died March 17. Mr. Kilby was born in Sandusky, O., locating in Cleveland in 1888.

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William V. Orr, 54, vice president, Apex Electrical Mfg. Co., Cleveland, which he aided in organizing 20 years ago, died March 22.

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Andrew Lawton, 77, at one time superintendent of Republic Iron & Steel Co., Youngstown, O., now Republic Steel Corp., but who retired some time ago, died March 13.

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G. D. Wolfley, 69, eastern representative of Arcade Mfg. Co., Freeport, Ill., foundry molding machines, died in Buffalo, March 15. He had been with the company for more than 25 years.

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Edward D. Priest, 70, chairman of the board of Parker Wire Goods Co., Worcester, Mass., and veteran designing engineer of the General Electric Co., Schenectady, N. Y., died March 26.

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Joseph Dove-Smith, 76, founder and president of Dove-Smith & Son, Niagara Falls, N. Y., died there last week. Mr. Dove-Smith came to this country from England in 1911, organizing the Niagara Falls company, which specialized in the design and construction of machinery.

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Henry I. Cobb, 71, architect and pioneer in the use of structural steel for building construction, died March 27 at New York. Going to Chicago in 1889, he attracted attention as an expert in steel construction, designing the Owings building and numerous other structures. In 1902 he removed to New York, after living several years in Washington, designing numerous steel buildings.

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Ray H. Griswold, 47 years old, president, Griswold-Eshleman Co., advertising agency, Cleveland, died March 30 after an illness of five months. He was born in Chardon, O., graduated from Western Reserve university in 1909 and entered the advertising copy service department of the Penton Publishing Co. Several years later he established an advertising agency business, which was the forerunner of the Griswold-Eshleman Co. Mr. Griswold was active in civic affairs and was a leader in industrial advertising. A year ago he served on the national board of judges of the Harvard university advertising awards. He was a director of the Ohio Cultivator Co. and a member of the American Association of Advertising Agencies and numerous other organizations.

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F. A. Diekhoff, foreign sales manager for Simonds Saw & Steel Co., Fitchburg, Mass., is believed to have died March 9 when the airplane in which he was a passenger plunged into the sea off the eastern coast of

**Stanley Hale Bullard**

Late vice president of the Bullard Co., Bridgeport, Conn., whose death March 22 was reported in STEEL of March 26

Mindanao island in the Philippines. One of the pontoons of the plane has since been found. Mr. Diekhoff was a native of San Francisco.

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Joseph S. Lovering Wharton, 80, associated with the foundry industry of Philadelphia for more than a half century, died March 17 at Cheltenham, near that city. He first entered the J. S. L. Wharton foundry, established by his father. Subsequently this became the Harrison Safety Boiler Works and then the Cochrane Corp., of which he was president at the time of his death.

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Henry D. Laughlin, 83, formerly active in railroad equipment circles, died recently on his Ashland, Wis., estate, to which he retired several years ago. He and others reorganized National Hollow Brake Beam Co.,

(*Concluded on Page* 89)

# Here and There in Industry

RELIANCE MFG. CO., Massillon, O., manufacturer of spring lock washers and other devices, is in process of being acquired by the Eaton Axle & Spring Co., Cleveland, subject to approval by stockholders April 20. The plan proposes exchange of five shares of Eaton stock for four of Reliance. Plants of the Reliance company are at Massillon and Detroit. Eaton has three plants at Cleveland for the manufacture of axles, bumpers, caps and heaters and plants at Detroit and Massillon for the manufacture of springs. Last year it acquired the Wilcox-Rich Corp., which has plants at Battle Creek, Saginaw and Marshall, Mich., for the manufacture of valves, tappets and piston rings.

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Ohio Seamless Tube Co., Shelby, O., has moved its western office to 1225 West Washington boulevard, Chicago.

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Ingersoll Magnetic Lock Co., Fresno, Calif., has leased space in the Michigan-Ohio building, 612 North Michigan avenue, Chicago, for a branch office.

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Concrete Engineering Co., Omaha, Nebr., has opened a warehouse at 2801 East Hennepin avenue, Minneapolis, to serve Minneapolis, St. Paul and the Northwest.

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Federal Steel Sash Co. Inc., Waukesha, Wis., has opened a sales office at 2309 Union Central building, Cincinnati, in charge of L. C. Krauss as factory representative.

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Quaker Mfg. Co., Chicago Heights, Ill., manufacturer of furnaces, has leased for its Chicago offices 2000 square feet of space in the Builders building, LaSalle street and Wacker drive.

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Geometric Tool Co., New Haven, Conn., has appointed J. C. Ross & Co., 2207 First avenue, south, Seattle, as exclusive selling agents for Washington and Oregon, effective from March 20.

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Dittmer Gear & Mfg. Corp., Lockport, N. Y., has re-elected all former officers, including A. H. Dittmer president, C. W. Christy vice president, and W. F. Williams, secretary and treasurer.

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John Deere Co., Moline, Ill., farm implement manufacturer, is preparing to reopen its Canadian plant at Welland, Ont., soon. The new Canadian tariff situation makes operation of the Welland plant desirable, it is understood.

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Fields Chemical Co., Los Angeles, John D. Fields president, plans erection of a plant to produce metallurgical coke, utilizing the by-products in its chemical works. Capacity of the first unit will be 20 tons of coke per day.

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Jackson Furnace & Foundry Co., Jackson, Mich., has changed its name to Jackson Foundry Co. The company produces gray iron, semi-steel, aluminum and brass castings. J. G. Tawse is president, E. B. Nye vice president, and Anna N. Dugot secretary and treasurer.

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Tungsten Mines Inc., recently formed, will start production of tungsten concentrates during April at its property near Addy, Stevens county, Wash. Small production by hand operations have preceded construction of a plant of 50 tons daily capacity. James P. Reed is president and manager.

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Lincoln Electric Co., Cleveland, has moved its Chicago office to a new building at 1455 West Thirty-seventh street, from its former location at 53 West Jackson boulevard. This move is made to provide additional space for sales and service and also to allow storage of a complete stock of welding supplies and accessories.

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Standard Steel Mills, with capitalization of $100,000, has been organized at Wichita, Kans., to manufacture culverts, manhole covers and various road equipment items. John A. Logan is president and general manager. A portion of the old Stearman Aircraft Co. plant, 60 x 150 feet, has been acquired for production purposes.

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Penn Heat Control Co., Philadelphia, control of which is held by General Electric Co., Schenectady, N. Y., has been formed to take over all the assets, including patents and goodwill, of the Penn Heat Control Corp. Its product consists of devices for the regulation of temperature in household heating. Personnel and organization will continue under the new regime.

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Missouri-Kansas Pipe Line Co., Otis building, Chicago, has placed contracts for pump station equipment for installation at Mullinsville, Kans., to the Worthington Pump & Machinery Corp., New York, and Cooper-Bessemer Corp., Mt. Vernon, O. The former will furnish four units of 262-horsepower uniflow steam engines and the latter three units of 170-horsepower engine compressors, direct driven.

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Inland Iron Works Co., Okmulgee, Okla., which recently acquired the former plant of United Iron Works Co. in that city, has perfected its organization and is now in production. Manufacturing facilities include gray iron and nonferrous foundries, machine shop, structural and plate shop. L. T. LeBow is president, J. H. Campbell vice president, C. H. Henry vice president and secretary, and C. J. Campbell chief engineer and plant superintendent.

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Arthur S. Leitch Co. Ltd., Toronto, Ont., has completed arrangements with the Sims Co., Erie, Pa., for manufacture at Toronto of the products of the latter. For 17 years the Leitch company has sold the Sims products which were manufactured at Erie. They consist of hot water generating and storage appliances. The Leitch company also has completed arrangements for manufacturing in Canada the cylinder guided expansion joints and other products of the Yarnall-Waring Co., Chestnut Hill, Philadelphia.

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Alloy Metal Wire Co. Inc., Moore, Pa., has installed a four-high rolling mill for the production of cold-rolled strip up to 16 inches wide and from ⅛ to 0.003-inches in thickness. This enables the company to produce stainless steel strip, wire and rods for all purposes where specifications call for finer precision limits than usually reached. The new mill is designed to obviate difficulties experienced in rolling stainless steels. The company also has recently erected a new building to house additional furnaces and pickling equipment.

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Globe Iron Co., Jackson, O., has re-elected John E. Jones president, Edwin A. Jones vice president, treasurer and general manager, and Charles P. Chapman secretary. E. Crandall Bentley was elected a director to succeed the late Moses Morgan. George Heffrin, formerly with the Corrigan, McKinney Steel Co., Cleveland, and the United States Steel Corp., is superintendent of the blast furnace. The company has given a contract to the Research Corp., New York and Bound Brook, N. J., for three Cottrell electric precipitators. The engineering work and erection in connection with the gas cleaning installation have been let to the Arthur G. McKee Co., Cleveland. It is expected to be ready by June.

*Fairchild Aerial Surveys*

# BEAMS FROM BROADWAY

*NEW YORK*

WHILE structural steel lettings during the first quarter in the New York metropolitan area, including northern New Jersey, compare favorably with last year, two awards account largely for the favorable comparison. These included 125,000 tons for the Metropolitan Square-Radio City units and 20,000 tons for the new structure about to start for the Metropolitan Life Insurance Co.

The New Jersey state highway commission has placed contracts for more than 50,000 tons for bridges and viaducts. Other public work accounts for the bulk of the rest of the volume. Private construction, especially apartments taking 1000 tons or more, is at a low ebb. There is little evidence that this source will contribute to the volume of structural steel rolled during the remainder of the year.

## Bids Are Below Estimates

Meanwhile, a fair volume of public work continues to come out. The New York city subway program, however, has yet to call for a ton of steel this year. Engineering details and uncertainty regarding the Sixth Avenue route are holding up contracts. The west side highway program also is lagging. Schools are taking approximately the same tonnage as last year with indications of some improvement.

Bids for general contracts on governmental and city work are almost consistently below—far below in many cases — engineers' estimates. This is due to lower construction costs, estimates in some instances being made on prices prevailing more than a year ago. For some projects bids have been rejected and readvertised, the officials not being satisfied with the status of the bidders or for some technical reason.

## Race for Height Pauses

Many architects are taking the view that for practical purposes the limit in the height of skyscrapers has been reached in the Empire State. Others take the stand that New York has about reached the saturation point in its needs for office structures. One prominent builder with this opinion is Fred T. Ley, head of the construction firm of that name. Mr. Ley has announced that plans for the construction of a new office tower on the site of the Union League club have been held up. This tower had been planned as one similar in design to the Westinghouse building.

One architect contends that vertical transportation will not exceed 1250 feet (Empire State is 1248 including the mooring mast) until further inventions facilitate it.

Double-deck elevator system is to be installed in the new 67-story building under construction for Henry L. Doherty & Co. and Cities Service Co., Pearl street, between Pine and Cedar. This will be the first extensive use of such system in a large New York building. Already the Doherty building is beginning to make its mark in the Lower Manhattan skyline as structural steel is going up with three derricks. James Stewart & Co. have the general contract and Taylor-Fichter Steel Construction Co. is erecting approximately 20,000 tons of structural steel.

Elevators will be loaded at two levels simultaneously, there being two main entrances, one on an upper level accessible directly from Pine and Cedar streets and the lower level from Pearl street. The double-deck elevators will furnish the express service to the tower. While the compartments on the upper level are being loaded with passengers for all odd-numbered floors from the 29th to the 59th, the lower compartments will be taking on passengers for all even-numbered floors from the 28th to the 58th floor.

The elevators will be of the latest automatic control type and the tower expresses will travel at the rate of 1000 feet a minute. It will be necessary for both operating levers to be in full-start position, with hatchway and car doors closed, before the elevator will start.

This building will be equipped with escalators to the sixth floor, being the first office building in New York to be so served.

## Scrap Proves a Liability

New York has several thousand tons of scrap to sell. Father Knickerbocker may, however, have to give it away or pay for its wrecking. With the extension of subway lines, elevated railroad lines are rapidly becoming obsolete.

A good consumer of structural steel 20 years or more ago, the elevated railroad is due for the scrap pile. But there is no rush for this material as scrap, and it is good scrap, too.

New York recently abandoned the Thirty-fourth street elevated spur between Second and Third avenue, opening bids on several thousand tons of structural steel. One bid was sub-

*(Concluded on Page 74)*

# EDITORIAL

## Too Many Companies Spoils Business for All

IN TIME of business adversity the ruthless law of the survival of the fittest manifests itself in many sinister ways. Usually its emphasis is found in increases in the number of business failures, mergers, purchases, etc., and in the relegation of once proud companies into positions of obscurity.

During the past year the business world has witnessed record breaking numbers of these developments. According to the figures of R. G. Dun & Co., commercial failures in 1930 numbered 26,355 or 1.21 per cent of the 2,183,008 concerns in business. This was the highest rate of insolvency since 1915 when the percentage was 1.32. With this single exception the 1930 record was the worst since 1897.

While many consolidations and purchases arise from considerations other than self preservation against the inroads of depression, a large number of realignments in business consummated during the past year were influenced directly or indirectly by threats of adversity. In many cases the consolidation of resources under a single head was prompted by the theory that in union there is greater strength to combat the intense competition which attends a severe depression.

### Weeding-Out Process, while Painful, Is Necessary in Business World

Thousands of companies, many of which have refused steadfastly to unite with others and yet have had the resistance to withstand the storm, will emerge with only a semblance of their once proud prestige and power. Of these unfortunate concerns, a few eventually will rise to heights; others will remain in secondary positions or pass out of the picture.

This panorama of business disasters is pathetic. It is a sad commentary on our failure after scores of years of business experience to find a way of smoothing the hills and valleys of the business cycle. But in spite of these depressing aspects of the situation, there is a bright side to it. Viewing it from the standpoint of the requirements of business as a whole, it is easy to see that a periodic weeding-out process is not only desirable but necessary.

Left to itself a fruit tree will take on so many branches that the life-giving sap is largely dissipated in useless growth and not in fruit. This condition is easily corrected by occasional pruning. In the same way business, if left to its own inclinations, would expand so freely that the nation's resources and opportunities would be dissipated through inefficient channels. The business depression, while admittedly a poor agency for the purpose, does exercise the function of a pruning shear in ridding the business world of its weaker members.

It would seem that human ingenuity might well be directed toward a better solution of the problem. In 1899, according to the Dun figures, 1,147,595 companies were in business in the United States. In 1919 at the end of the World war the number had increased to 1,710,908, a net gain of 563,314 in 20 years. In 1929—a year of unusual prosperity—the total had swelled to 2,212,779, a net gain of 501,870 in 10 years. In other words, the increase in the number of concerns was almost as great in the last decade as in the two previous decades combined.

### Number of Companies Increasing Faster Than Business Opportunities

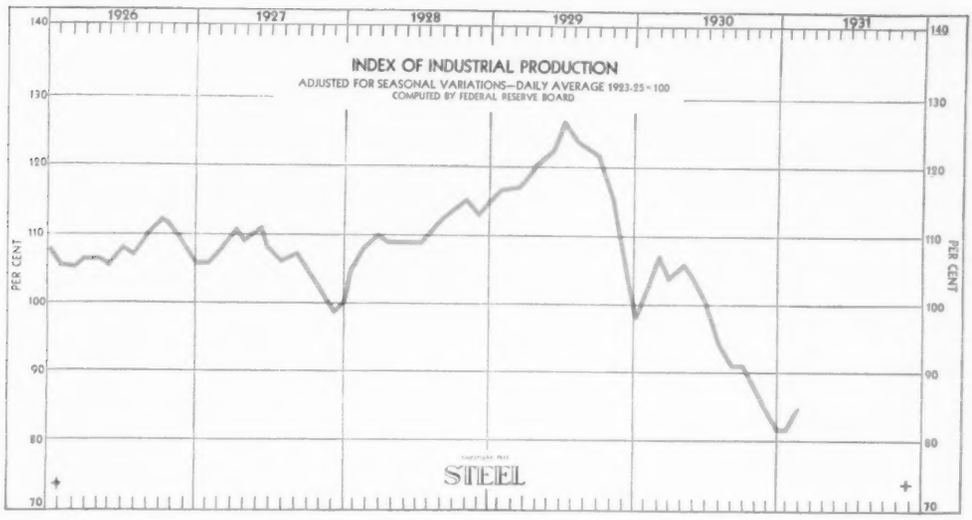
This accelerated increase in the number of enterprises in the United States cannot be justified by the growth of the country or by the larger requirements for materials, manufactured goods, and services—especially if the improvements in production and distribution and the increasing size of companies are considered. Today a single concern often performs the functions which heretofore required the services of a dozen or more companies.

It is clear that the country is suffering from a superabundance of commercial enterprises. How can the supply be kept in line with the demand without stifling individual initiative? The present system, whereby we rely on business depressions to do the necessary pruning, is wasteful at the best.

Perhaps the business world can help the situation by demanding higher qualifications of those who wish to enter business. Possibly business and finance has been too lenient in backing concerns which have no chance of permanent success. Is it not true that a positive "no" to a prospective business man whose project does not ring true is a more kindly word than a "yes" which leads him into bankruptcy ?

Everyone would profit from an intelligent curbing of the desire of many incompetents to "go into business." Market research, education and sound advice will help.

# THE BUSINESS TREND




| 1930 | |
|---|---|
| Feb. | 107 |
| Jan. | 103 |
| **1929** | |
| Dec. | 99 |
| Nov. | 106 |
| Oct. | 117 |

| 1931 | |
|---|---|
| Feb. | 85 |
| Jan. | 82 |
| **1930** | |
| Dec. | 82 |
| Nov. | 84 |
| Oct. | 88 |

## Business Is Supersensitive at Turn of Quarter

AMERICAN business enters the second quarter with mixed feelings as to the outlook. In many respects the record of the first three months of the year was encouraging. The trend of industrial activity was upward. The Federal Reserve board's index of industrial production, which stood at 82 for January, jumped to 85 for February and probably will show a slight gain for March.

As has been the case in recent years, steel has led in the recovery. The slow upward curve of steelworks activity from 33 per cent of capacity at the beginning of the year to around 57 per cent in the third week of March was reassuring. Automobile production also has enjoyed moderate gains in the same period. Building construction has improved somewhat, due to a promising upturn in the building of residences.

### Too Much Emphasis Is Placed on Significance of Minor Trends

But in spite of these favorable tendencies, business sentiment at the turn of the quarter is unsettled. A lag in steelworks activity, discernible in the last week of March, has proved disconcerting, although there is no real basis for fear. The price situation also is disturbing because weaknesses in some commodities have appeared at a time when indications pointed rather clearly to the near approach of stability.

The entire country is in a state of supersensitiveness. Every slight change in volume of production or trend of prices is viewed through magnifying glasses, with the result that sometimes the broad perspective is lost. The stock market reacts to minor factors, which in normal times would be ignored completely. In brief, the business world in its present state of nervousness is too easily upset by trifles.

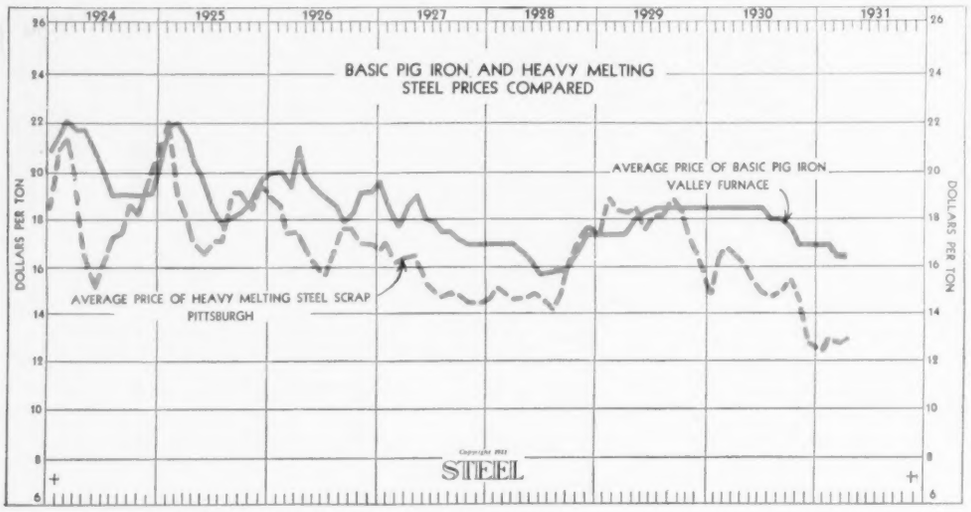
Freight car loadings for the week ended March 14 were slightly higher than in the preceding week but the total volume thus far in 1931 still is lagging about 17 per cent behind comparable totals for 1930.

### Production Figures for March Will Surpass February Totals

The record of production for March, when revealed by the monthly statistics, will be favorable. According to the weekly compilations of steelworks activity, the output of steel ingots for the month should be safely above the February total. With at least seven more blast furnaces active in March than in February, a comfortable gain in pig iron output is indicated.

Automobile builders in the United States are turning out about 61,500 cars weekly. The total of 229,768 units produced in the United States and Canada in February, as reported by the department of commerce, probably will be exceeded by 25,000 to 30,000 units in March.

The majority of the commodity price barometers have remained nearly stationary during the past few weeks. However, the hope that a definite upturn is near at hand is somewhat endangered by recent signs of weakness. STEEL's composite of steel and iron prices has remained unchanged at $31.71 for three weeks, but softness in certain flat rolled steel products may cause a slight decline in the current week.




**Basic Pig Iron**

| | 1931 | 1930 |
|---|---|---|
| March | $16.75 | $18.50 |
| Feb. | 16.75 | 18.50 |
| Jan. | 17.00 | 18.00 |
| | **1930** | **1929** |
| Dec. | 17.00 | 18.00 |

**Heavy Melting Steel**

| | 1931 | 1930 |
|---|---|---|
| March | $12.90 | $16.60 |
| Feb. | 12.75 | 16.90 |
| Jan. | 13.00 | 16.55 |
| | **1930** | **1929** |
| Dec. | 12.75 | 15.00 |

## Heavy Melting Steel's Monthly Average Improves Slightly

Minor fluctuations in pig iron and steel scrap during March left basic pig iron, valley furnace, at its February average, $16.75, and brought up heavy melting steel, Pittsburgh, slightly to $12.90 compared with $12.75 in February. In the early part of the month pig iron was quotable in the valley at $16.50, but later returned to its previous level of $17. There was an adjustment in southern pig iron also. Heavy melting steel again proceeded through minor changes which had characterized the market for the two previous months, ending at a slightly higher level. A year ago pig iron was steady at $18.50 and heavy melting steel was retreating to $16.60.

## Daily Rate of Coke Output Up in February

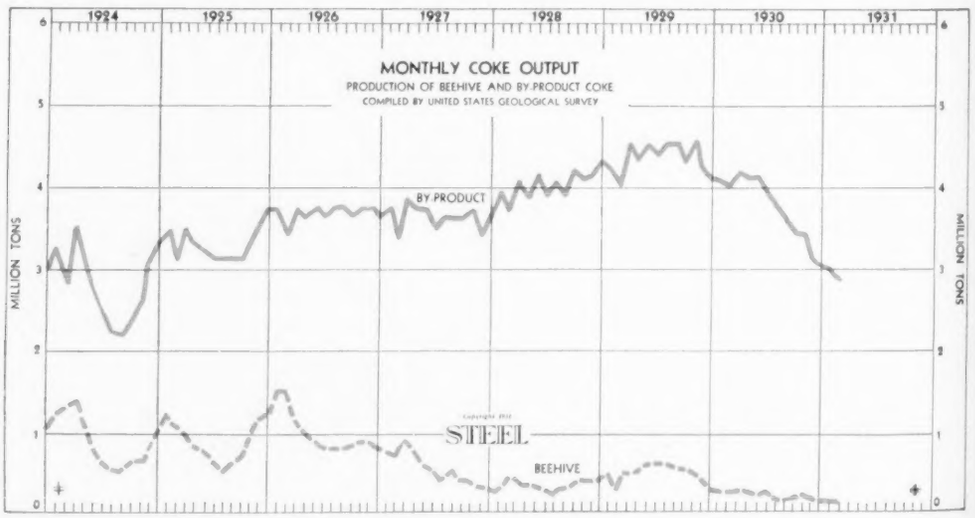
Both in beehive and by-product coke, February output declined, but in terms of the daily average rate, there was an increase. Total production in both classes was 3,060,766 tons, made up of 2,897,866 tons of by-product and 162,900 tons of beehive. The output of by-product coke increased from an average of 99,747 tons per day in January to 103,495 tons per day in February, a gain of 3.8 per cent. Production of beehive coke showed an increase in its daily average from 6037 to 6788 tons. With the exception of December and January, the daily average rate still is the lowest since 1924. Eighty-eight plants were active during February, operating at about 62 per cent of capacity.

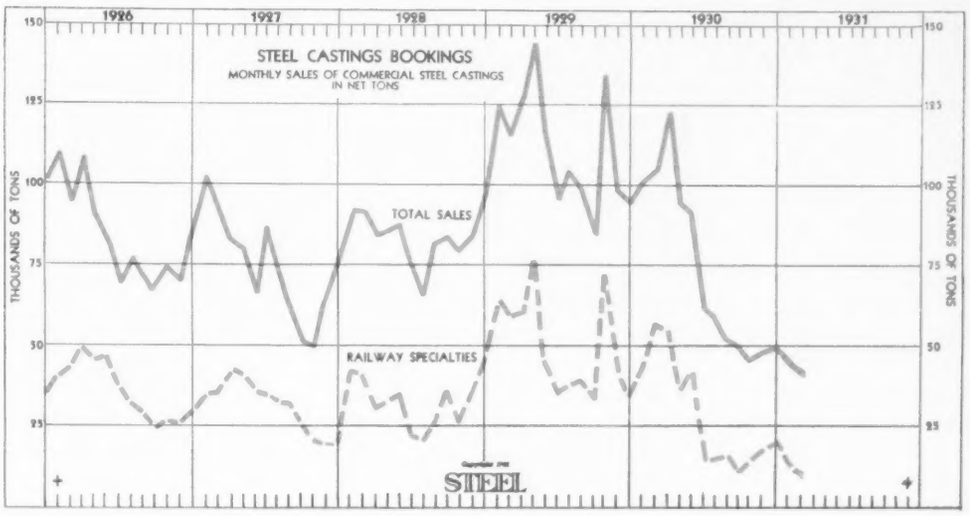
**By-Product**

| | Tons |
|---|---|
| February, 1931 | 2,897,866 |
| January, 1931 | 3,092,153 |
| February, 1930 | 4,004,217 |

**Beehive**

| | |
|---|---|
| February, 1931 | 162,900 |
| January, 1931 | 163,000 |
| February, 1930 | 281,000 |






**Total New Bookings**

| | Tons |
|---|---|
| February, 1931 | 40,062 |
| January, 1931 | 46,635 |
| February, 1930 | 114,419 |

**Railway Specialties**

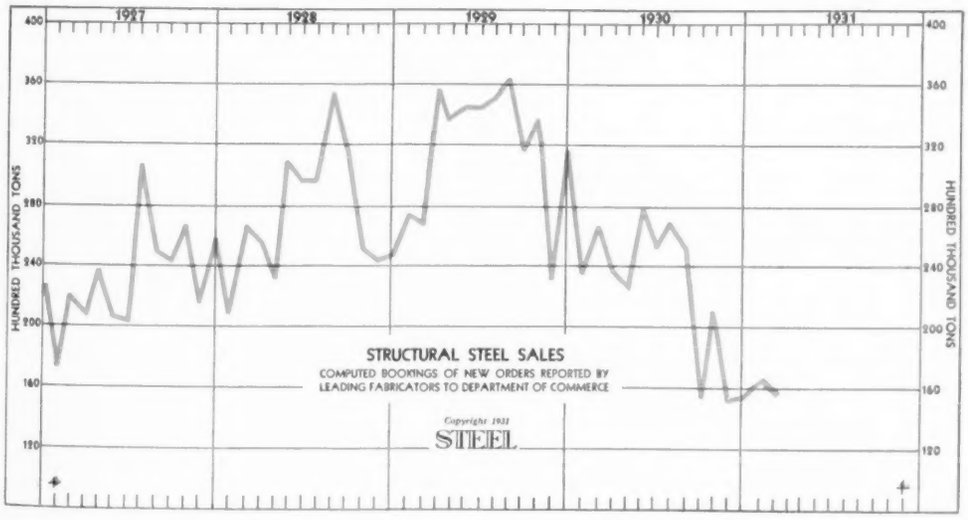
| | |
|---|---|
| February, 1931 | 9,124 |
| January, 1931 | 14,718 |
| February, 1930 | 55,310 |

## Railway Specialties Again Bring Drop to Castings Orders

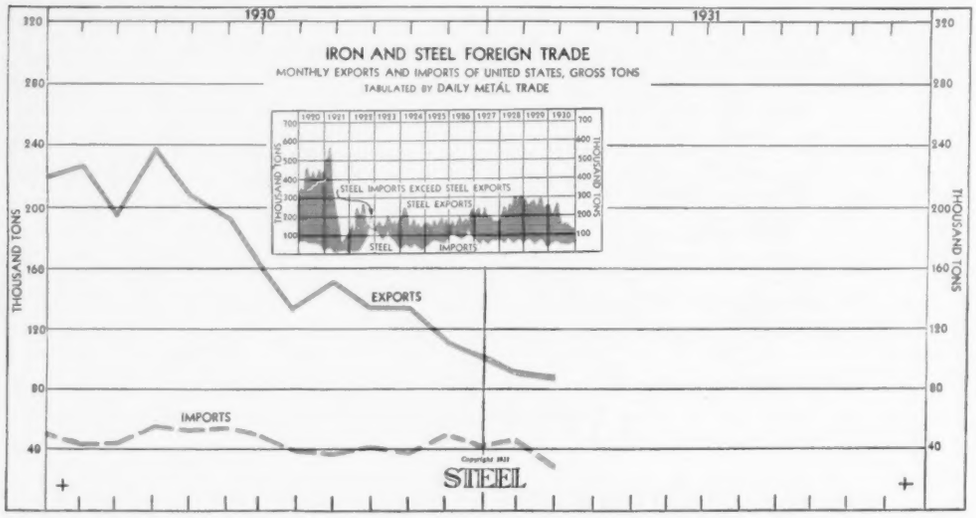
New orders for commercial steel castings met with further declines in February, chiefly as a result of further curtailment of purchases by railroads, railway specialties dropping to the lowest volume in years. Total orders amounted to 40,062 tons, against 46,635 in January. Bookings of railway specialties were down to 9124 tons from 14,718 tons in January. Total production was up slightly, from 46,160 to 49,313 tons. An increase was noted also in shipments of railway specialties, which totaled 13,909 tons. In miscellaneous castings, orders decreased from 31,917 to 30,938 tons in February. Bookings in this class have remained at the same general level for about five months.

## Structural Steel Orders Experience Slight Decline

A small decrease which may find explanation in the difference in the length of the two months was registered by structural steel orders in February, compared with January. Total bookings were 159,200 tons, and the industry was at 39.8 per cent of capacity. The rate for January was 40.6 per cent. The month's total still was above the totals for December and November. In February, 1930, 267,600 tons were booked, the rate being 66.9 per cent. February shipments were down to 166,800 tons from 172,000 tons in the previous month and 280,400 tons in February last year. Weekly figures during the current month tend to indicate that the spring rise in construction is under way.




| | Tons | |
|---|---|---|
| | **1931** | **1930** |
| February | 159,200 | 267,600 |
| January | 162,400 | 238,800 |
| | **1930** | **1929** |
| December | 152,800 | 297,605 |
| November | 151,200 | 212,135 |
| October | 209,200 | 319,550 |




**Exports**

| | Tons |
|---|---|
| Feb., 1931 | 91,212 |
| Jan., 1931 | 92,745 |
| Feb., 1930 | 348,835 |

**Imports**

| | |
|---|---|
| Feb., 1931 | 28,045 |
| Jan., 1931 | 40,781 |
| Feb., 1930 | 281,707 |

## Total Iron and Steel Exports Lower, Daily Average Is Higher

February exports of iron and steel were at a relatively better rate than in January, although the total for the month, 91,212 gross tons, was 1513 tons under that of the previous period. The daily average movement gained from 2992 tons to 3258 tons. Imports, which in past months have witnessed little of the contraction taking place in exports, dropped considerably in February, totaling 28,045 tons, 12,736 tons less than in January. As in the past, principal exports were to Canada, scrap heading the list of items. The principal supplying countries were Belgium and Germany, and shapes and pig iron were the leading items. The drop in imports improved the trade balance somewhat.

## Car and Truck Output in February Gains 29 Per Cent

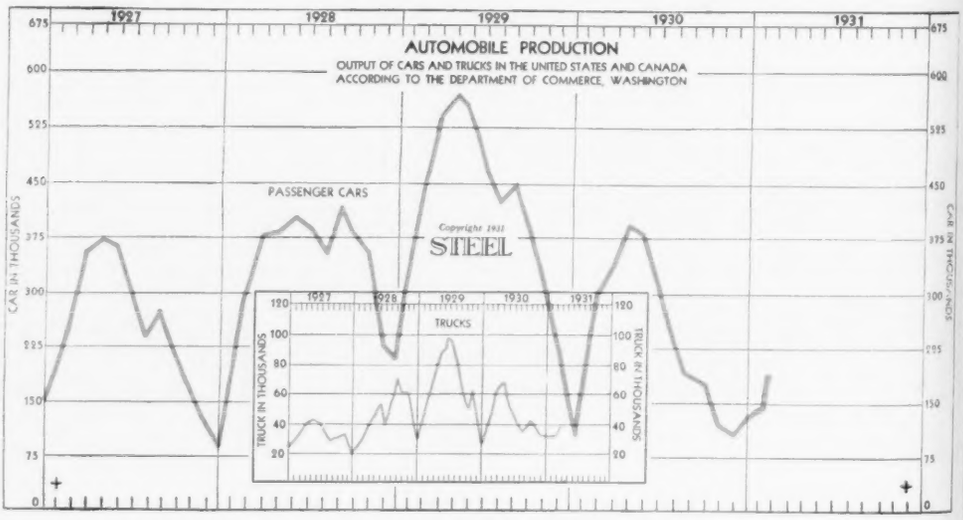
Production of cars and trucks in the United States and Canada during February was 229,768 units, a gain over the preceding month of 29 per cent, but a drop of about 35 per cent from February of last year. February, 1922, was the last February in which output was lower. For the United States the increase during the month was 28 per cent and for Canada 52 per cent. Passenger car production in both countries was 189,433 units, compared with 294,868 a year ago, and truck output was 39,975, against 51,084 in February, 1930. For the first two months of the year total production of cars and trucks was 408,115 units, compared with 629,571 in the corresponding period last year.

**Passenger Cars**

| | 1931 | 1930 |
|---|---|---|
| Feb. | 189,433 | 294,868 |
| Jan. | 144,878 | 254,049 |
| | **1930** | **1929** |
| Dec. | 128,295 | 96,920 |
| Nov. | 106,494 | 176,629 |

**Trucks**

| | 1931 | 1930 |
|---|---|---|
| Feb. | 39,975 | 51,084 |
| Jan. | 33,521 | 38,557 |
| | **1930** | **1929** |
| Dec. | 32,928 | 28,582 |
| Nov. | 34,665 | 50,368 |



# Centrifugal Process Meets Demand for High-Quality Galvanizing

BY K. P. ROLSTON
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## Part I

HOT-DIP galvanizing is a means of coating small parts and because of its low cost and the ability of the coated stock to resist corrosive influences, the process is used widely. The method is common practice in plants manufacturing plumbing supplies, pipe fittings and pipe, pole-line hardware, bolts, washers, nuts, etc. In fact, this process embraces so many manufacturing economies that it has enjoyed a well recognized preference.

Hot-dip galvanizing, when correctly applied, gives a highly satisfactory bond between article and coating. When pickling is performed properly and the spelter is at the right temperature complete amalgamation between article and zinc most nearly is approached. The extent of this amalgamation depends largely upon the density of the basic ferrous metal as well as other conditions in the galvanizing routine.

The objective in zinc-coating steel or iron is the prevention or retardation of corrosive action. Corrosion is a natural enemy preying on all ferrous metals that are exposed to the elements, and is particularly destructive to steel when left in an unprotected state. A thick coating on small parts is not only unnecessary, but under certain conditions, may prove detrimental. The prime essentials are that the coating be complete and well bonded. The few factors favorable to a heavy coating on small parts are outweighed by those which oppose such a method. Many small parts are called upon to fit into other parts, and many small castings and forgings are provided with threaded openings, pin holes or similar cavities, which must be coated, but will offer considerable trouble in fitting, if the zinc coating be too heavy. It is customary in manufacturing threaded bolts, and other items calling for fits, to make due allowance for galvanizing, by cutting the threads undersize or enlarging holes

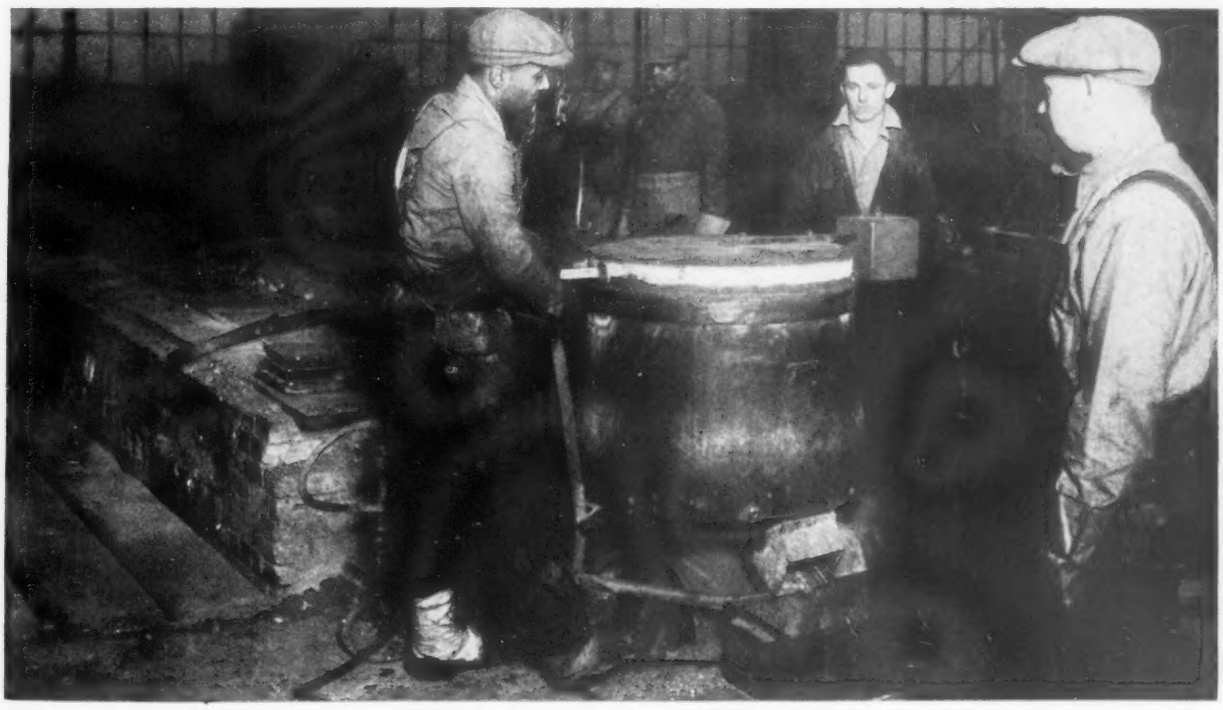

*Fig. 1—Semipit mounted centrifugal machine for removing excess spelter from surface of galvanized parts*

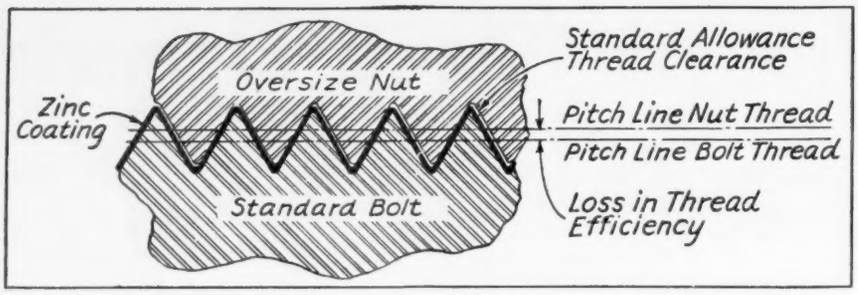


*Fig. 2—Diagram depicting the loss in thread efficiency*

and spaces to provide for the coating of zinc. The definite allowance made for this coating is nullified, and if the coating is not under control, its undetermined thickness results in failures to fit.

In threaded work only a minimum allowance for coating will insure the efficiency of the thread. The tensile strength of zinc is about 5000 pounds per square inch and it has a compression of about 20,000 pounds. Steel has a normal strength of 60,000 pounds tensile and about the same under compression. Therefore, zinc is not a factor in adding strength to bolt threads, where the coating is of abnormal thickness but actually reduces the strength, compared to an uncoated fit, as a longitudinal thread section will reveal

The coefficient of expansion between steel and zinc is considerable. Even under ideal conditions this difference in the ratio of expansion begets a tendency on the part of the two metals to break their bond, due to the friction of readjustment, when they are subjected to extreme changes in temperature. Consequently, a heavy coating is a potent factor in loosening the zinc from the base, because it does not permit the outside layer to conform to the inner mass in its transition from high to low temperature. A thin coating allows the surface a wider measure of flexibility and greatly minimizes these difficulties. In reality, the molecules of the coating are given a better opportunity to slip and readjust themselves without causing an open fracture on the outside surface or breaking the bond between the ferrous surface and the zinc.

EXTRACTING excess zinc from the surface of small galvanized articles is facilitated by centrifugal means. In the accompanying article, the first of three installments, methods commonly used in handling small articles that have been hot-dip galvanized are explained. The centrifugal process as related to the job galvanizer and precautionary measures for minimizing dross formation will be discussed in early issues of STEEL.

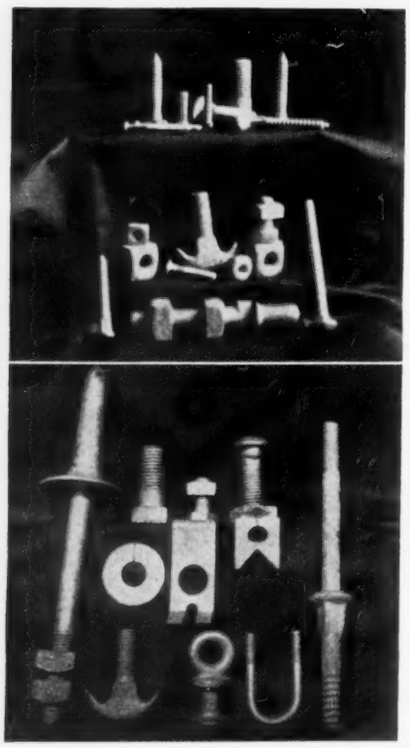

*Fig. 3—Pole line hardware centrifugally coated*

**Complete Cooling Essential**

An exaggerated example of such expansion and contraction is found in steel plates that have been galvanized and water dipped, but not cooled, and then are piled one on top of another, preventing a rapid radiation of internal heat. The zinc is "set" in the quench, and when the stock is piled in close formation the confined heat in the plates reheats the coating, causing it to expand to an abnormal degree, and separate from the steel surface. This condition often has been attributed to the texture of the steel, or improper pickling, when the true cause is the method of handling after galvanizing and the difference in ratio of expansion between the two metals.

Certain industrial requirements call for a piece that will withstand the deflection of the coating and of the material on which the coating is placed. This is true in the manufacture of hooks, which are formed and galvanized with the eye open and then closed after coating. Galvanizers should bear in mind that the coefficient of expansion exists on all articles galvanized, regardless of size or shape, and that the actual amount of friction set up between the zinc and the body of the article is governed by the maximum and minimum temperatures to which they are subjected. Relative expansion of iron, steel and zinc is as follows:

| Material | Structure | Linear expansion per unit length per degree Fahr. |
|---|---|---|
| Iron | Brittle | 0.00000556 |
| Steel | Malleable | 0.00000636 |
| Zinc | Brittle | 0.00001407 |

The obvious course then, to a highly efficient galvanized product, where fits are the issue, is to limit the thickness of the coating to the minimum. Additional thickness adds nothing to the resisting powers of the coat but, in the case of threaded work, actually weakens them structurally, when called upon to support a load, because the threads must be cut smaller to permit them, with the extra coating, to fit the nut.

Question frequently has been raised by operators of galvanizing plants concerning the merits of the centrifugal process of extracting excess spelter from castings, drop forgings, stampings and threaded parts, as compared to the same parts han-

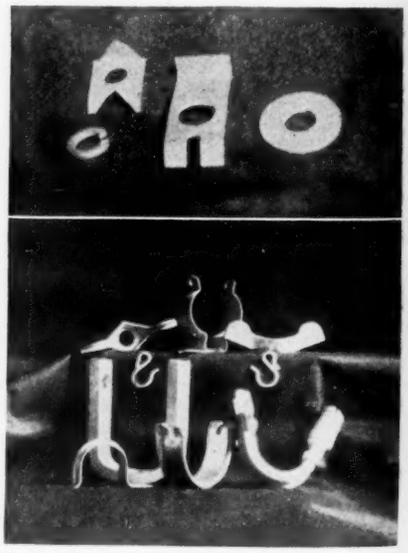

*Fig. 4—Centrifugally galvanized steel stampings*

dled by the tumbling barrel. Tumbling of hot-dipped articles is an old practice and, while there are several modifications of the conventional tumbling barrel, the essential features are identical.

The tumbling barrel is usually a cylinder, mounted in a nearly horizontal plane, and is provided with some means for elevating the one end, so that articles placed therein will gravitate to the other end as they revolve, and therefrom eject themselves. Both the size and the speed of the barrels vary with conditions, and the ideas of the individual operators. In most cases they are equipped with perforations, and also provided with ribs or pins, mounted on the inner surface, to cause an agitation of the contents during the slow descent from the entrance end to the exit. Some barrels are provided with secondary heat on the exterior surface in an effort to stimulate the removal of excess spelter.

### Contents Discharged in Water

A water container is included in the equipment where the articles are dumped after they leave the barrel. In the operation of a tumbling barrel the temperature at which the spelter kettle should be operated to secure results is important. This temperature should not be under 900 degrees Fahr. and in many cases is held above 950 degrees. Heating a kettle to these temperatures is bad practice and hastens kettle replacement due to a "burn out." The rapid dross formation increases loss of available zinc for pay work, and more fuel is consumed than when the kettle is kept at a lower temperature.

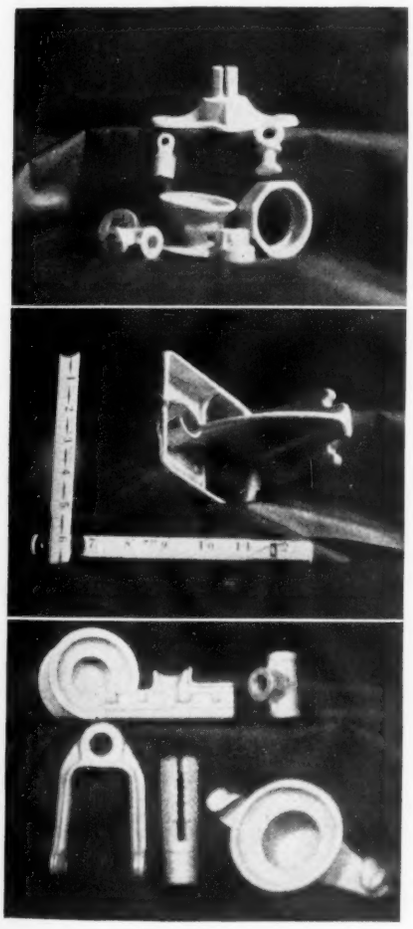

*Fig. 5—Centrifugally galvanized fittings. Parts shown at top and bottom are malleable iron and in the center a 5-pound intricate iron casting*

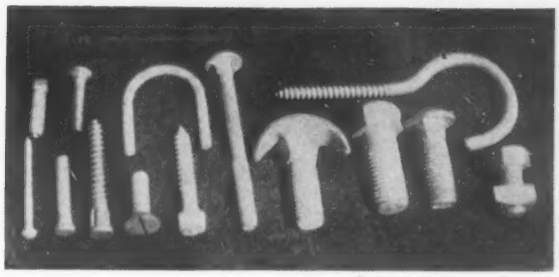

*Fig. 7 — Typical steel threaded commodities galvanized by the centrifugal process*

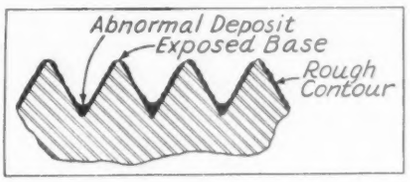


*Fig. 6—Diagram of a bolt thread which has been coated improperly*

To produce an article in the tumbling barrel capable of passing average inspection, the zinc, when in a molten state, must have great fluidity, because the articles are separated widely in the barrel and radiation, even with the use of secondary heat, is rapid. The term, tumbling barrel, is deceptive. It should be called a battering barrel because unless the article is battered against the side walls and dropped many times, it will not jar loose a portion of the coating, and the object of the barrel will be defeated. An objectionable feature of this battering is frequent permanent injury done to the coating and in some cases to the article itself. It is not uncommon for threads to become impaired under such action, and the repeated hammering of the zinc coating affects the service for which it is intended.

Galvanizing with the tumbling barrel as a means of jarring off some of the spelter may result in a product with an uneven or heavy coating. On bolts it is either necessary to undercut the threads, or overtap the nut to a marked degree, to permit screwing them together. The physical values of bolts so threaded are low.

Dross formation in the spelter is ever present, even with low temperatures of operation; but above 870 degrees Fahr. the formation increases rapidly with each extra degree of heat. At 900 degrees the increase is about 100 per cent over that at 870 degrees Fahr., and if the kettle is operated at about 950 degrees Fahr., a ruinous quantity of dross is the result.

High-temperature kettle operation offers further disadvantages. Dross, which is an alloy of iron and zinc, constantly is being formed from the walls of the kettle and the erosion of the surface of the articles being galvanized. At extremely high temperatures the action is acute, and a large quantity of dross remains in suspension within the body of molten zinc at all times. This dross becomes attached to the articles and cannot be removed by tumbling, leaving a rough surface greatly resembling grains of sand embedded under the surface coating.

### Handled by Dippers

In using a tumbling barrel it is customary to convey the articles in dippers through the molten spelter and to dump the contents from the dippers into the mouth of the barrel. The average load of each dipper is about 25 pounds, although larger dippers sometimes are used.

The spelter that is flaked from the article by the battering action within the barrel is forced through the perforations in the walls of the barrel and is deposited on the floor. The articles finally are ejected from within the barrel into some type of a water quenching device which in most cases has an automatic conveyor to lift the pieces from the bath. The articles then are dumped upon the floor of the plant or in a container provided for that purpose.

The centrifugal extraction of excess spelter from articles coated by the hot-dip process is termed "centrifugal galvanizing," to designate it from the time-worn methods of hot-dip galvanizing, namely, hand shaking and tumbling. Accurately speaking, the term centrifugal galvanizing is not correctly applied, as the action of centrifugal force is not used in galvanizing the article, but in extracting the excess spelter that otherwise would remain as a part of the coating after the regular hot-dipping.

Centrifugal galvanizing, and its application to practice within the galvanizing industry was brought about

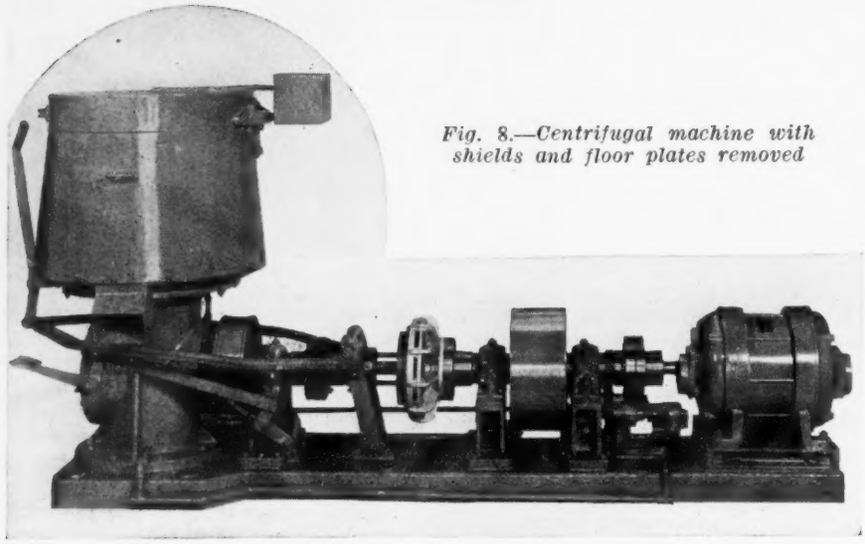

*Fig. 8.—Centrifugal machine with shields and floor plates removed*

through the efforts of the late E. L. Watrous, who invented and patented the process, and certain types of mechanical devices by which it should be adapted to the working conditions found within the average galvanizing plant. For this reason it is referred to as the Watrous process of centrifugal galvanizing, the patents on which are owned and controlled by the E. L. Watrous Galvanizing Co., Chicago.

Previous to the development of this process, small articles requiring a coating either were treated to handshaking or tumbling after being removed from the spelter bath. Since its inauguration, however, manufacturers, job galvanizers and purchasers of galvanized articles have been able to write specifications to cover the coating of many products that previously could not be galvanized by the hot-dip process because of the impossibility of removing objectionable portions of the coating that precluded accurate fitting between members. This especially was true in the case of odd-shaped and bulky malleable and cast-iron articles, steel forgings and stampings.

**Used for Other Purposes**

Centrifugal force has been used for many years for the purpose of extraction such as the removal of moisture from wet articles, separating cream from milk, etc., but in the field of hot-dip galvanizing the process of extraction offers obstacles that required equipment designed and built for this particular service. Contrary to the tumbling method of flaking off the coating by battering the article within the walls of a barrel, the centrifugal method removes the excess spelter by applying the natural law that a body reacts against a force that is causing it to move in a curved path. The articles being centrifuged cannot free themselves from this curve path because they are contained within a suitable basket but the excess spelter, which is in a molten form, responds to this force, and is ejected through the perforated side walls of the basket leaving the centrifugal articles with a coating that accurately follows the contour of the exposed surface.

In the operation of centrifuging galvanized articles, the handling is rapid, because the pieces are transferred from the spelter kettle to the centrifugal machine in bulk. The baskets used to transfer these articles permit the draining of fluid spelter from the contents, but, because the pieces lie in proximity the heat contained within the mass does not radiate rapidly and the extraction is performed with no perceptible reduction in temperature, thus securing a uniform extraction from all parts of the article.

**Light Packing Essential**

Contrary to what might be supposed, the pieces being centrifuged within a basket, on a well-designed centrifugal machine, move and change their position during the first period of centrifuging unless they are packed tightly within the basket. It is obvious then that they must not be tightly packed. The movement of the pieces is a decided advantage and plays an important part in the removal of undesirable molten spelter from cavities and other relatively inaccessible portions of the piece. In filling the baskets, preparatory to immersion in the spelter bath, the average castings and forgings, etc., can be dumped into the containers without regard to position of fin, rib, boss or other projection. Threaded bolts, nuts, washers and other small pieces of every description generally are shoveled into the baskets, judging the net weight within reasonable limits, dependent on the capacity of the centrifugal machine employed.

The application of rotation to the spindle holding the basket of coated articles creates a centrifugal pressure which tends to adjust the objects to the position of least resistance. The heavier sections of the larger pieces are turned outward, which shifts the piece in the process of centrifuging. On the smaller pieces, such as bolts and nuts, the pieces climb over one another and mount the side walls of the basket in an ineffective attempt to break the bonds of the curved path through which they are traveling. In both cases this movement causes the pieces to roll or twist in such a manner as to present various sides of the article to the lines of force and prevents pocketing.

If pocketing should exist, it is because the baskets are overloaded for that particular line of work, or because they are not of sufficient diameter to permit freedom of motion. It should be remembered that this motion is not analogous to the movement given to the same article when tumbled in the conventional type of tumbling barrel. There is no battering action, and the transfer of the object from one position to another is done without jar or hammering. Once the piece has assumed its adjusted position it remains thus until the basket is removed from the machine. Castings made of iron with delicate ribs and lugs can be centrifuged successfully without injury. Similar castings treated in a tumbling barrel would be broken or damaged.

*(To be Continued)*

## Develops Nickel-Clad Steel Plates as New Product

Nickel-clad steel plates is a new product developed by the Lukens Steel Co., Coatesville, Pa. These plates are ¼ to ⅜-inch thick and heavier with one side coated with nickel, the weight of the nickel being about 10 per cent of the total. The first plates of this type produced by the company were used by the General American Tank Car Co. for the manufacture of an 8000-gallon railroad tank car for transporting caustic soda.

In producing these plates, relatively thick sections of steel and nickel are placed in contact, heated to a high temperature and rolled to the finished plate. The bonding of the two metals rests on the tendency of nickel to alloy with steel at high temperatures. During the rolling the two metals, if properly bonded, spread together so that the layers of nickel and steel are of uniform thickness throughout.

Nickel-clad plates combine the corrosion resisting properties of pure nickel with the structural strength of steel. Careful fabricating methods are necessary in making use of this steel so as to have an unbroken surface of nickel.

# MESTA AUTOMATIC PLATE VALVES (IVERSEN PATENT)

MESTA Automatic Plate Valves and Check Valves, made under the "IVERSEN PATENT," range in size from 2" to 16" in diameter. The success of this Valve is due to its simplicity and durability, the selection of special materials entering into the construction of its few component parts and the extreme care of manufacturing and assembling.

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MESTA MACHINE COMPANY

Pittsburgh, Pa.

# Mesta

# Furnace Design Incorporates Many New Developments

BY E. G. DECORIOLIS
Surface Combustion Co.

THREE major requirements enter into the design of any furnace: Heat distribution, atmosphere and mechanisms. This discussion is confined to these considerations and within the scope only of fuel-fired furnaces, specifically, those using gaseous fuels.

By heat distribution is meant the application of heat where required, in such quantity as needed and at such intensity as the process will permit. In the in-and-out box-type furnace, heat distribution is reduced to its simplest form and is largely synonymous with uniformity of temperature but in considering the modern production furnace, this definition must be broadened to include location, volume and intensity.

The first forward step in improving the mechanism of gas combustion occurred when means were developed for controlling the air-gas ratio by the now well-known proportioning mixer and one-valve control. It made for flexibility and economy of operation, made possible the maintenance of a definite and predetermined 'mosphere and above all relegated th duties of combustion engineering to the furnace designer instead of leaving them at the mercies of the furnace operator. It paved the way for development of automatic continuous fuel-fired furnace in providing a reliable combustion system, unaffected by fluctuations in gas line pressure.

### Single and Two-Stage Systems

Whereas in its initial form this system incorporated the entrainment of the gas stream in a single stage by an air stream in the low-pressure gas system, or of an air stream by a gas stream in the high-pressure gas system, more recent developments have brought out double-stage entrainment now available in both high and low pressures. This has not rendered obsolete the single-stage entrainment but has widened the scope of gas application to fields which heretofore presented difficulties with the one-valve single-stage system. This system had as its prerequisite the complete and intimate mixture of the ratioed gas and air, followed by instantaneous combustion within the burner tunnel. This liberated maximum heat at a point adjacent to the burner.

Contrary as it might seem, this system was best applicable to comparatively low temperature operations, such as are usual in the steel heat treating furnace. From the viewpoint of heat distribution advantage was taken of the velocity of the entering gases to agitate or circulate the furnace atmosphere and by proper distribution of the burners this swirling action quickly diffused the heat within the furnace chamber and in such paths as could be predetermined by correct design. The cross section in Fig. 1 of a heat treating furnace fired by this system illustrates this point.

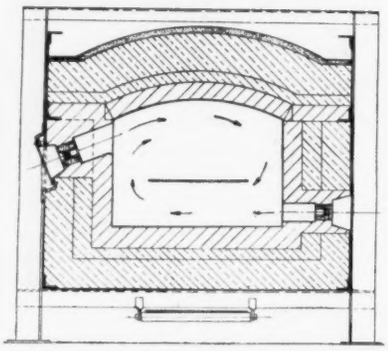


*Fig. 1—Cross section of continuous belt-type furnace fired by a single-stage burner*

Where design did not permit rapid recirculation of gases within the furnace, it followed that localized overheating would take place in the region adjacent to the burner and in high temperature operations this localization had made it difficult to apply single-valve proportioning control. With double-stage entrainment, however, these limitations have been largely overcome. This can be illustrated best by a recent application of the two-stage high-pressure velocity burner to a copper smelting furnace in which the temperature at the bridge wall adjacent to the burner orifice is 2500 degrees Fahr., whereas at a point 30 feet distant, where the gases by slight inclination of the burner strike the bath, the observed temperature is 2750 degrees Fahr. The furnace dimensions inside are 28 feet wide by 140 feet long.

### Combustion Is Delayed

A similar application is now being developed for cement burning. The virtue of double-staging entrainment lies in the possibility of delaying combustion of the gases by predetermining the ratio of air entrained at the respective stages, thus fulfilling the requisites of proper heat distribution in delivering the heat at the point, at the volume and at the intensity required. As a point of added interest, the six burners on this furnace consume 110,000 cubic feet of 1000 B.t.u. natural gas per hour. The manipulation of a single valve controls the whole firing operation in regulating the demand to conform with the output of the furnace. Fig. 2 is a close-up of two-stage high-pressure velocity burners showing adjustable shutters.

A parallel development is that of the two-stage low-pressure velocity burner wherein air under 1 pound pressure is the entraining medium. This burner may be so regulated as to provide delayed combustion similar to that obtainable with the two-stage high-pressure burner. In addition, it possesses the characteristic of gradually changing its air-gas ratio as its capacity is reduced over a wide range of turn down, the proportion of gas to air increasing with the turn-down.

This feature is particularly desirable in many metallurgical furnaces wherein it is desired to enrich the atmosphere on turn-down to offset air intrusion under reduced furnace pressure. But its outstanding characteristic is its ability to maintain a predetermined air-gas ratio when using preheated air with no readjustment to take care of fluctuating air temperatures. It is thus particularly applica-

PROGRESS in the development of gas-fired industrial furnaces has been particularly rapid during the last few years, the advance having resulted from a better understanding of the three major factors—heat distribution, control of atmosphere and operating mechanisms. The accompanying article, prepared from a paper presented before the Western Metal congress in San Francisco, Feb. 16-20, is an intelligent but simple discussion of these factors, how they have influenced designs and how they probably will influence designs of the future. The author, E. G. deCoriolis, is research director, Surface Combustion Co., Toledo, O.

## *BIRDSBORO BUILDS A CONTINUOUS HOT STRIP MILL . . .*

In the new, modern plant of the West Leechburg Steel Company, West Leechburg, Penna., operates a most complete, continuous hot strip mill . . . From cold billet in the storage yard to the finished coiled or bundled strip—Birdsboro equipment serves each step of its manufacture . . . And, numbering among Birdsboro design and construction are:

Billet conveyor tables

Pinch Rolls

Open side shear

Shear tables

2—16" Mills

4—14" Mills

5—12" Mills

3—Edgers

Stationary twist guides

Rope transfer and tables

All pinion stands and drives

Flying shear approach table

Flying shear (improved type)

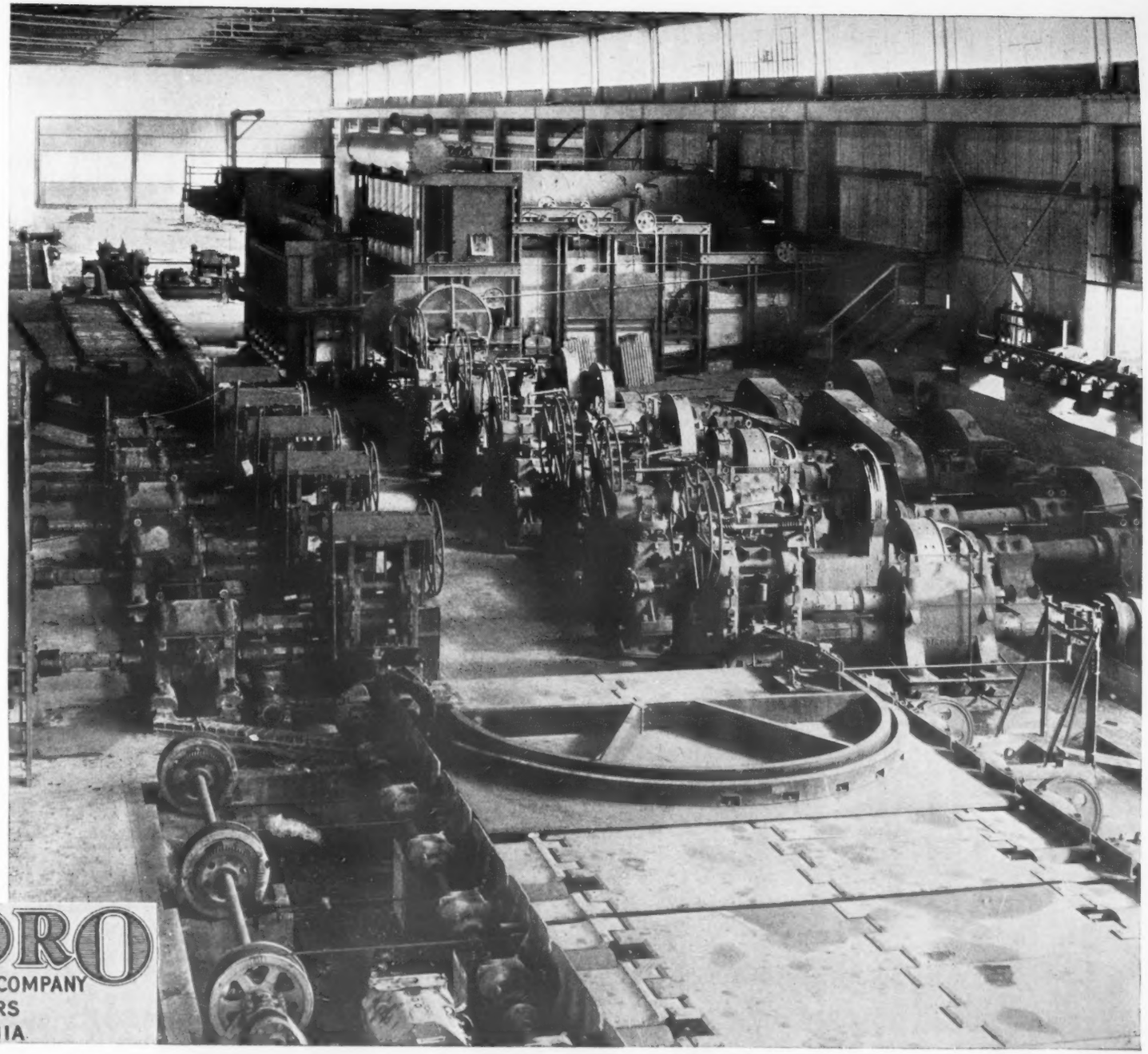
Flying shear delivery table

Strip piler

Guides

Vibrator

Coiler and equipment



**BIRDSBORO**
STEEL FOUNDRY AND MACHINE COMPANY
DESIGNERS AND BUILDERS
BIRDSBORO, PENNSYLVANIA

ble to recuperative furnaces and the flame may be set for delayed combustion or for a short intense flame. An example of the former application is in a recently developed direct-fired recuperative soaking pit. The controlled combustion in this pit has made possible a reduction of 50 per cent in the scale loss and 30 per cent in the fuel consumed as compared with the regenerative reversing pit now in common use.

The oldest method of burning gas, preceding the discoveries of Bunsen, and long before the advent of premixed systems, was by inserting a gas pipe into an aperature in the furnace chamber and depending upon stack action to entrain air for combustion. This produced a partially luminous flame. The disadvantage of this system was that there was no control of combustion, the process was wasteful of fuel, and these factors more than offset such advantages as could be gained from the greater radiation of the luminous flame.

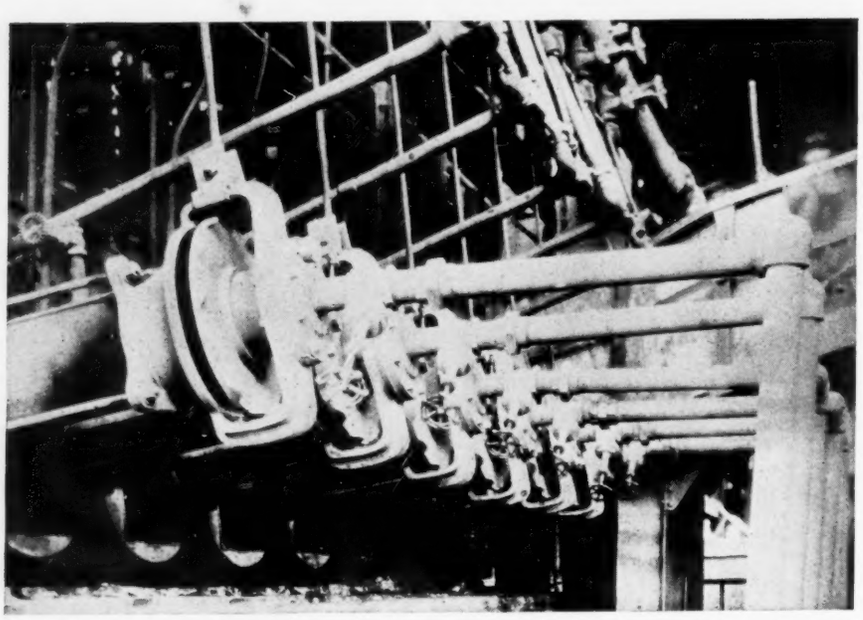


*Fig. 2—Close-up of two-stage high-pressure velocity burners showing adjustable shutters. Six burners are controlled by a single valve*

Recent studies on this subject have led to the discovery of methods which make possible for the first time the control of combustion of luminous flames by a process known as "diffusion combustion." Work now is in progress to apply these methods to various industrial heating operations. Considerable interest has been aroused as the result of this work. A word of caution might be injected concerning possible misapplication of this diffusion combustion. The fact that the yellow flame gas burner is so old and it is but recently that methods have been evolved which make possible the proper utilization of its luminosity is an indication of the complexity of the process. Nor is it expected that controlled luminous combustion is about to displace other and well established methods. It will take time, research and experience to allocate its field properly and only through such procedure can full advantage be taken of its undoubted merits.

One phase of its application will be as an aid in controlling furnace atmospheres and in this case it may prove a valuable adjunct to existing systems of combustion. This question of proper and suitable atmospheres is rapidly assuming an importance second to none in the development of industrial furnaces. From core baking in the low temperature range to forging at the opposite extreme, the development of proper atmospheres is looked upon as one of the greatest contributions which can be made at this time in the improvement of these heating processes. To arrive at an undertanding of the nature of these atmospheres and their effects many research projects are now under way which it is expected will materially affect future furnace designs and operation.

Insistent demands of industry for automatic and continuous production have had to be met by furnace designers through the development of mechanisms under heat and have created problems of considerable magnitude. The designer of automatic machinery, which operates at room temperature, has at his command a wide variety of construction materials which are denied the furnace designer. Notwithstanding these limitations, marked progress has been made in mechanized furnaces which are today meeting most exacting requirements in line production. Such conveying mechanisms as the pusher, the belt, the chain, the apron and the roller hearth have been applied successfully in meeting a wide variety of heating problems. No modern production shop is now complete without some such furnace equipment.

It is but recently, however, that the steel industry has adopted the more highly refined mechanized furnace and the problems there presented have brought in their wake added complications of large tonnages to be handled at elevated temperatures. The cost of the product handled being much lower per ton than that of heat-treated machine parts, factors of labor and fuel in handling and heating have required far closer scrutiny.

In such furnace equipment the factor which dominates design is the available heat resisting alloy for construction of the mechanical parts. It may be said that progress in this field has been made possible only through the development of special alloys coupled with an improvement in alloy foundry technique. No less than six different analyses are now in use by the Surface Combustion Co. in the fabrication of alloy parts. An appreciation of the importance of these factors may be gained when it is realized that some of the mechanical furnaces for the steel industry require no less than 30,000 pounds of alloy castings for a single furnace unit. Without a definite knowledge of the no-creep stress of these alloys and an assurance that the foundry practice has been such as to warrant reliance on the soundness of the castings, the weight of these alloys per furnace unit might easily be doubled to insure safety. The cost of such equipment would then become prohibitive.

### Design Presents Problems

The factor of cost alone, however, is not always the determining point. Furnaces have been designed where beam sections could not be increased beyond a certain point without the beam sagging of its own weight at elevated temperature. An example of such a furnace is a suspended-type walking-beam sheet normalizer where the maximum temperature to which these beams are subjected approaches 2000 degrees Fahr.

This furnace is 125 feet long and the total expansion of the mechanism is 16 inches. It was designed so that when erected the hearth would be elevated at an angle above the horizontal and when expanded at the operating temperature of the respective zones it would be perfectly horizontal.

Furnaces of this same general design have been developed for heating bars and sheets in the rolling of corrosion-resisting steel, while a considerable number have been installed in sheet mills for rolling black iron and full finished auto body sheets. These furnaces have resulted in a material increase in production, eliminated labor and improved the quality of the product, all of which has reflected

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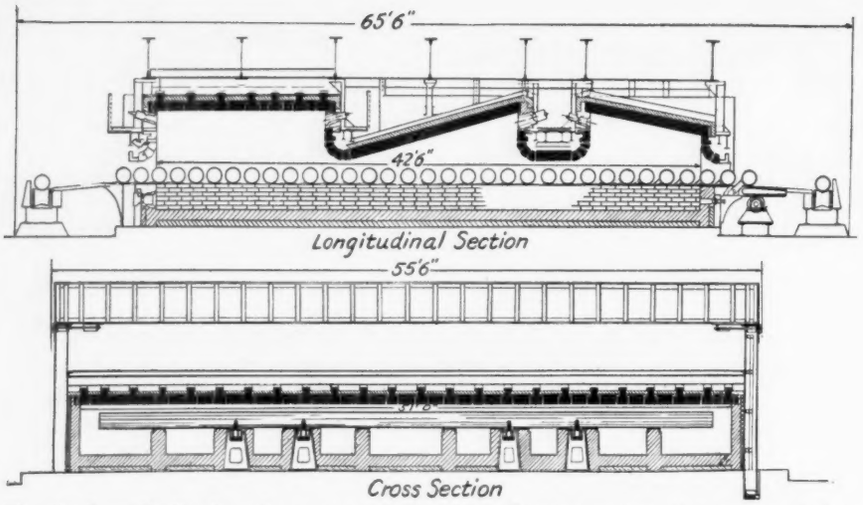



*Fig. 3—Longitudinal and cross sections of continuous automatic furnace being constructed to normalize high-carbon steel tubes 14 inches diameter and in lengths up to 47 feet. It will have a capacity of 220,000 pounds of tubes per hour*

itself in substantial reductions in operating costs.

The cumulative effect of these progressive and pioneer developments has now been projected into the design of what is believed to constitute the largest heat treating furnace ever attempted. It is now under construction and will when completed normalize high-carbon steel tubes. Longitudinal and cross-sectional views of this unit are shown in Fig. 3.

The furnace is divided into three zones with a saw-tooth suspended-arch construction spanning a width of 52 feet inside by 43 feet long. Twelve thermocouples with automatic valves will control the flow of gas in these heat zones. When operating at a temperature of 1600 degrees Fahr., this furnace will feed, convey and discharge automatically normalized steel tubes with a diameter of 14 inches, a length of 47 feet and with an hourly throughput of 222,000 pounds.

## New Meeting Routine Will Feature Discussion

An innovation in technical society meetings will be undertaken during the June meeting of the American Society for Testing Materials, June 23, at Hotel Stevens, Chicago, at which two sessions will be devoted to a joint symposium of the American Society for Testing Materials and the American Society of Mechanical Engineers, on the engineering problems involved in the use of metals at high tempertures. The effort is being made at this symposium to reserve a major portion of the time available for discussion of papers rather than presentation of papers.

Approximately 30 papers are to be presented, but their authors have written them with the express understanding that no author is to present nor even to summarize his own paper. The high spots of all the papers will be summarized at the first session by a representative of a joint committee of the two societies, which is sponsoring the symposium. Another representative of the committee will summarize the papers for the second session.

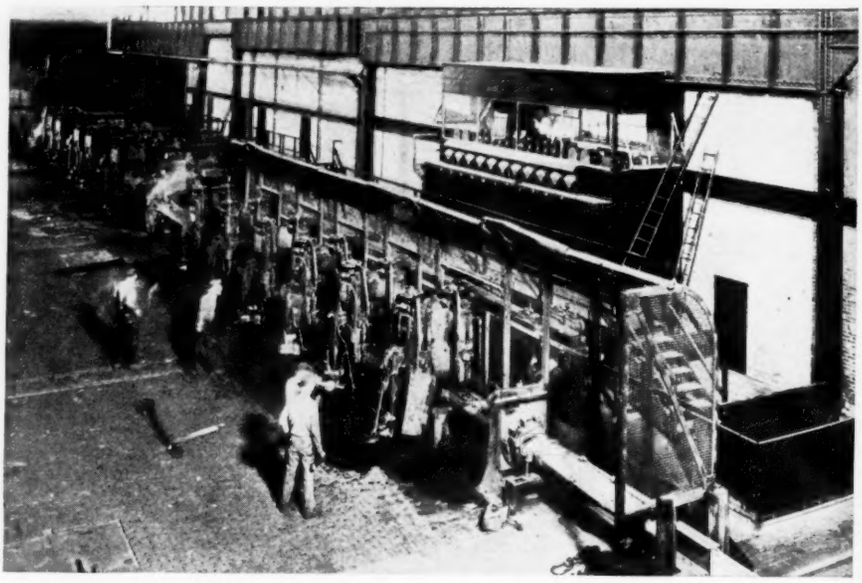
Neither representative has written any of the papers, and their task is to set forth a broad picture of the general engineering situation as it is brought out in the individual detailed papers. The subjects will then be thrown open to discussion, with the authors ready to answer questions that will be directed at them, but otherwise being "seen but not heard."

It is thus hoped to combine the advantages of giving, for reference, a complete picture of the engineering situation in the printed transactions, with active and interesting discussion at the meeting itself. If the scheme works, it should offer a way out from the boredom of many over-crowded technical society meetings.

The papers are to be preprinted, and in the hands of tho society members and guests who will wish to discuss them, well in advance of the meeting. A copy of the preprints may be obtained from C. L. Warwick, 1315 Spruce street, Philadelphia, about May 10.

## Microphone in Hot Strip Mill Facilitates High-Speed Rolling

ONE of the novelties in the 12-inch hot strip mill of the Sharon Steel Hoop Co., Sharon, Pa., is the use of a modified public address system, with a microphone and loud speaker, by means of which the men on the rolling floor deliver operating instructions and speed changes to the operator in the control pulpit. Strip is rolled at a maximum speed of 2400 feet a minute, or about 26 miles an hour. The 4500-horsepower roughing mill motor, one of the largest in such service in this country, is 21 feet long, weighs about 100 tons and has a rotating shaft 24 inches diameter. It was built by the General Electric Co., Schenectady, N. Y.



*Continuous hot strip mill served by microphone and loud speaker*

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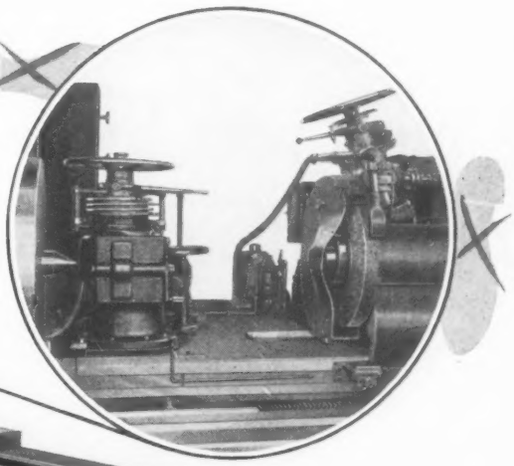
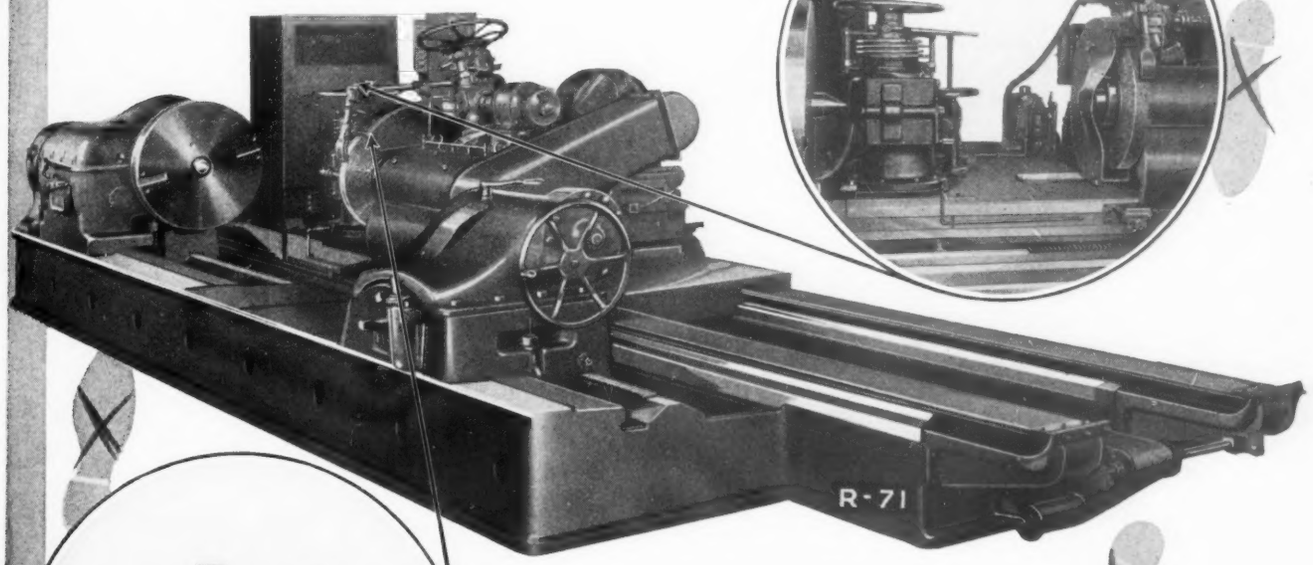
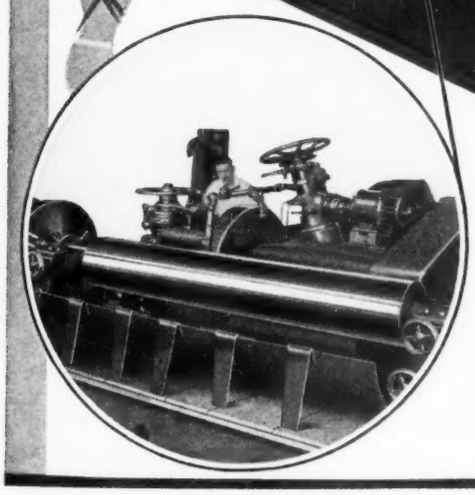
## on The New LANDIS TYPE 30 ROLL GRINDERS

The ideal machine tool is one that is completely and instantly within the control of the operator. From this point of view, as from many others, the new Landis Roll Grinders are ideal machines. The inserted close-up views show plainly that all controls—both mechanical and electrical—are grouped closely about the operator's platform.





Of major importance also is the position of the operator with relation to the point of contact between the wheel and the work. Here again this machine is designed in an ideal manner as, from his normal position, the operator sees exactly what is taking place at the point where the work is actually being done.

LANDIS TOOL COMPANY
WAYNESBORO PENNSYLVANIA

DETROIT CHICAGO NEWARK PHILADELPHIA

78

*Photos, Courtesy Morgan Lithograph Co.*

*Lithograph printing requires many sizes of metal sheets, for small pictures to the largest posters for billboards. Zinc and aluminum now are used almost exclusively*

# Printing with Steel Sheets—Other Metals Have a Rival

BY A. J. HAIN
Associate Editor, STEEL

STEEL'S usefulness in the printing industry is mainly in the form of typesetting machines, presses and plant equipment. There is no field in which it performs a greater service, and none in which more ingenuity has been shown in the development of mechanical units to reduce the time and cost and to improve the quality of printing. This is in evidence in every department and in all the arts and trades which contribute to the printing of words and illustrations.

Steel has supplied the mechanism for printing, but it never has been as important as some of the nonferrous metals, such as lead, copper, zinc and aluminum, for the production of printing surfaces. It is inconceivable that it should ever supplant type metal for typographic printing, but it is possible and probable that it will occupy a more important place among the others as a material for printing plates. The first door leading to such a development has just been opened.

Steel was used for many years for making etched and engraved printing plates, and the words "steel engraving" still convey the impression of an especially fine print. Good results were obtained when other methods were comparatively crude, but the rapid development of platemaking with copper, zinc and aluminum pushed "steel engravings" into the background with the antiques.

The complaint against steel in the graphic arts was its hardness, and difficulty in etching it quickly and uniformly with acids or in cutting it with a graving tool. Steel also was used for many years as a facing material for copper plates, to prolong their surface, but here, too, it has been superseded by other metals, nickel and chromium.

### A New Process; How It Works

Picture a thin sheet of steel fastened securely to a cylinder in a printing press. The sheet serves as a printing plate, yet there are no raised areas or etchings on it; it is smooth over its entire surface. Start the press, and that part of the sheet which is to print takes ink, while that part which is to not to print remains bare. Speed up the press until the cylinder is revolving faster than any you ever saw in a newspaper printing plant. The printed paper comes through the press, illustrations reproduced with the faithfulness of photographs, and the letters crisp and sharp.

Sounds like magic? It is—modern mechanical magic. It is a new printing process developed in England, depending for its operation on the use of steel sheets. If sheet manufacturers had deliberately set to work to devise a process exclusively favoring their product they could not have reached a conclusion so completely fulfiliing the condition as this.

The process has been used several years in a large British printing establishment, where it originated. Whether it ever comes into widespread use in the printing industry remains to be seen. The rotary gravure method of printing was used by a few commercial houses in this country and abroad many years before it was accepted by newspapers and magazines. Established methods of printing change slowly, but once in a lifetime a revolutionary type of process comes along.

The process is a curious combination of old ideas, which generations of platemakers spurned as impracticable. An inveterate experimenter in England refused to ignore natural phenomena; he would not be stopped by the limitations of copper, zinc and aluminum, and he found in steel just the material he needed for progress. Today steel has become a big word in the art; investigators in this country are beginning to "inch in" on the idea. It may all be only another spark in the minor romance of steel, and then, again—

Some of the details may enable the sheetmaker to form an opinion whether it looks good. Bear in mind, there are just three general methods of printing: First the typographic, the most widely used and most firmly entrenched of all. For many reasons it is not likely to be displaced.

The next most important method is the planographic, so called because

the entire surface of the printing plate or sheet is flat, certain areas being made to take ink and others to repel it. This method originated with the lithograph stone which has the natural property of retaining moisture on its surface. When an image in greasy crayon or ink is laid down on the dry stone it adheres, whereas the exposed areas can be damped and the damp areas reject the ink. A series of dampening rollers and ink rollers are used with all such processes.

As a step in the evolution of the lithographic method of printing, surfaces of light-weight zinc and aluminum sheets were coated with various mixtures of powdered lithograph stone. Next it was found that by giving the metal a fine "tooth" or grain by abrasion with sand and steel marbles the grain retained moisture much like lithograph stone.

### Stone Discarded for Metal

The ease with which these sheets could be manipulated doomed the rigid ponderous lithograph stones. Many tons of zinc and aluminum sheets are used annually in the printing industry in this country. A large amount of copper in the form of cylinders, with walls about ½-inch thick, is used in the rotary gravure method.

There are innumerable variations of the planographic printing, some direct from metal sheet to paper, and others indirectly by first being off-set from the metal sheet to a rubber blanketed cylinder and from this on to paper. All of such processes have been bound to ink and water.

Hygroscopic inks have been in development for several years with a view to abolishing dampening rollers. These inks contain a minute proportion of hygroscopic salts, such as chloride of calcium. When the printing plate is once damped the ink by yielding up a small amount of moisture serves to keep the moist areas moist.

Printing presses have been run for weeks at a stretch with such inks, but the difficulty has been in keeping the hygroscopic material and the fatty inks intimately associated so that the product could be commercialized. This also was a British development, and it is understood to have reached a more perfected form recently in the United States.

The third method of printing is the *intaglio* (intarlio), or gravure. Of all processes in commercial use this calls for the most experience, skill and time. On the press the copper cylinder is covered all over its surface with an ink of cream-like consistency. A flexible steel blade is adjusted to press lightly against the cylinder and as the cylinder revolves it scrapes off all the surface ink, leaving that in the hollows which are to print. After each printing the cylinder must be put in a lathe and ground with a fine grinding wheel to obtain a perfectly smooth cylindrical surface, and after a number of such grindings the surface must be built up by plating.

The hollows which hold the ink are almost invisible; their depth regulates the shading, so that the degree of accuracy in grinding and polishing may be appreciated.

The finest of all printing processes, in commercial use is the collotype. This is nothing but printing from a gelatine film. A grained zinc sheet is coated with sensitized gelatine, and on drying reticulates, so that the surface has a mat appearance. By the action of light the surface is made to vary its resistance to water and ink, corresponding to the lights and shadows in the photographic negative. Such printing surfaces yield at best about 5000 prints. Innumerable efforts have been made to prolong the life of the surface. But despite this defect a number of large printing houses are using it for perfect reproduction.

The steel sheet process gives results fully equal to those of the collotype, with the additional advantage that the surface is permanent, and it is simpler to prepare than the gravure.

It is based on the fact that mercury rejects ink as quickly and completely as does water. Mercury amalgamates rapidly with copper, silver and some other metals, but does not amalgamate with iron or steel. Therefore, if the areas that are not to print are covered with copper or silver and the copper or silver is amalgamated with mercury, the amalgam areas will reject ink, while the bare steel will take it.

Why is steel necessary? It prevents the creeping or diffusing of the mercury, a distressing circumstance which defeated all other process workers who persisted in trying to isolate it on copper or zinc sheet.

Metallic mercury evaporates slowly, and to compensate for this a minute quantity of a salt or mercury is mixed with the ink. At each revolution the amalgam areas take up enough of the salt to replenish themselves, while the steel areas reject it.

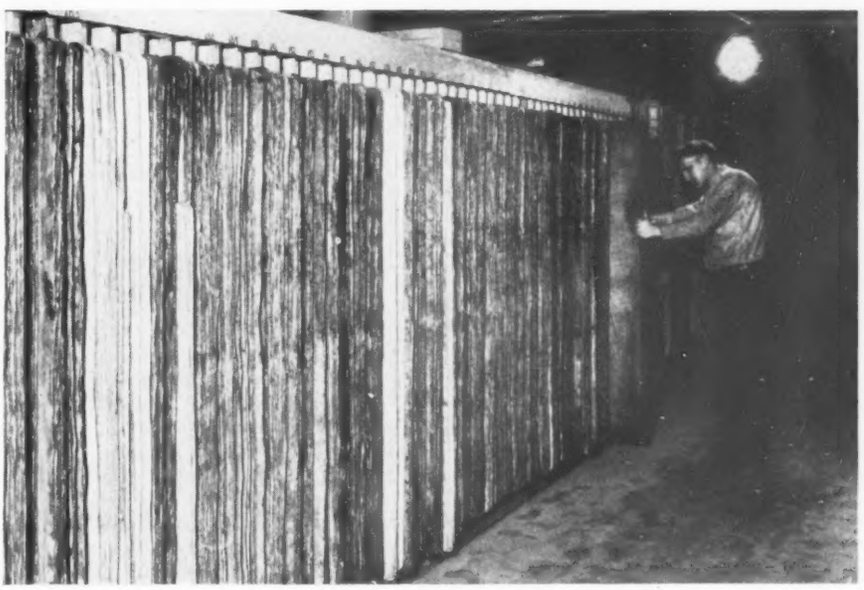
If the sheet is intentionally smudged with ink all over its surface, two or three revolutions of the press clear it up. The definition and sharpness of the areas give the prints much of the quality they possess; there are other reasons and refinements which have to do with the process itself, and not the material.

### Printing Is Done Rapidly

Actual printing is done at an unusual speed. The customary method of drying the printed paper with heat or paraffin spray is inadequate and an ink was developed which is reported by technical observers to dry instantly on contact with paper. American printers and publishers have been investigating the process, and it is quite likely to be introduced in this country.

*Conclusion:* It will win some recognition in the printing industry, for the remarkable quality of prints, if for no other reason. It is simpler than some of the fine processes, and it is more permanent than others. It employs salts of mercury which are poisonous. In printing ink this may present a hazard, certainly it would be pointed out as such by competitors even though there might be no such danger.

It comes on the scene just when the "dry" lithograph process inks are reaching a stage of practical development. Despite the unbounded enthusiasm of the most illustrious process workers who have investigated the process no one can safely predict its future. It will tend to stimulate interest in the use of steel sheets in the printing industry.



*This case, one of a dozen or more in a printing plant holds 2000 zinc and aluminum printing sheets*

# Properly Welded Pressure Vessels Meet Demands

BECAUSE it is only comparatively recently that the fusion welding of pressure vessels has been permitted, a paper on that subject presented by J. C. Hodge, engineer, Babcock & Wilcox Co., Barberton, O., before the Western Metal congress in San Francisco, Feb. 16-20, was enthusiastically received. Tests were revealed to indicate that with proper welding procedure and adequate testing, pressure vessel can be made which will meet all demands of service. A wide field for welded pressure vessels exists in the steam generating, chemical and oil refining industries where the vessels will be subjected not only to high pressures but high temperatures as well.

Mr. Hodge related how the boiler code committee of the American Society of Mechanical Engineers has been working on proper specifications for this work, finally achieving a code which seems practical. For the past year the Babcock & Wilcox company has been working on research to determine, proper procedure control, physical testing, X-ray testing and hydraulic testing.

### Welds Are Stress Relieved

Vessels having shells up to 3 inches thick have been welded and thoroughly tested, the shells and heads conforming to boiler code specifications. Welds are made by the electric arc process, after which the vessels are stress relieved by heating to remove the strains set up during welding. Weld coupons are subjected to physical tests, after which the weld in the vessel is subjected to X-ray examination. Satisfactorily passing this close scrutiny, the vessels are subjected to hydrostatic tests at pressures well in excess of those which the vessel will encounter in service.

One of the recent and growing developments in the welding field is the use of welded-on overlays to provide wear or corrosion resistance on metal parts subject to severe abrasion or deteriorating influences. Thus far, the principal applications of overlays have been made in the oil fields where drilling tools, shovels and other equipment have been prepared to give greatly increased life. Progress which has been made in this direction and possibilities for the future were outlined in a paper presented by Miles C. Smith, Stoody Co., Whittier, Calif.

Either gas or electric processes of welding are suitable for applying these hard coatings, although conditions are found where one or the other process offers greater advantages. The facing material, an alloy of great hardness, is supplied in the form of a welding rod and when properly melted in the electric arc or gas flame flows over the surface of the base metal. With proper technique the facing flows evenly over the surface, alloying to some extent with the surface of the base and solidifying in a hard layer.

According to Mr. Smith, it is of utmost importance that the base metal be absolutely clean and that no oxidation be permitted to take place in the molten deposit. A flux is required to weld on the overlay, and this can be applied separately or as a coating on the rod, the latter being the more effective method. In the past, the principal objection to welded-on overlays has been porosity, sponginess and some brittleness; however, the development of proper flux coated rods has completely overcome this difficulty. At present, it is possible to make overlays which are homogeneous, solid and extremely tough.

One of the problems in connection with the development of fluxes was that of finding a suitable material which would clean off the top of the overlay after the deposit had cooled. Fluxes now available form a light surface or crust which either chips off upon cooling or can be brushed off with little effort. Mr. Smith sees in the future many applications for hard overlays, particularly in the contact surfaces of cams and wearing surfaces of machine tools and other machinery. Attempts have been made to apply hard surfaces on cutting tools, but this has not yet proved feasible.

### Aluminum Welding Gains

A few years back it appeared that the commercial welding of aluminum was a problem incapable of solution. Today, this material can be fabricated by welding and at a more rapid speed than steel of corresponding gage. The welding of aluminum and its alloys was the subject of a paper prepared by W. H. Dunlap, research laboratories, Aluminum Co. of America, New Kensington, Pa. According to the author, this metal is capable of being welded by both the gas and electric processes, it being necessary to select the proper type of welding rod and flux, the latter usually being coated on the rod.

Because of the increasing prominence which welding is gaining in the fabrication of structural steel, Paul Jeffers, structural engineer, Los Angeles, recently became interested in the metallurgy of welding, and has been some time in studying this subject. In an address made before a session of the congress sponsored by the American Society for Testing Materials, he gave some of the results of his investigation, using as illustrations a number of photomicrographs of welds.

### Structure Must Be Refined

Welding, unless done under proper conditions, produces a coarse grained structure which has small resistance to impact and fatigue. A fine grained structure is desired and it is frequently found that when one weld is made over another, the second effects a refinement in grain structure in the first because of the application of heat and relatively slower cooling. In all welding work, according to Mr. Jeffers, it is necessary to exclude oxygen from the welding flame or arc to prevent oxidation of the weld and adjacent metal. Oxygen is excluded, of course, when gas or atomic hydrogen processes are employed as well as when coated electrodes are used.

A. F. Davis, vice president, Lincoln Electric Co., Cleveland, reviewed progress which has been made in the erection of structural steel by arc welding. His comments covered many of the important structures welded in recent years, design of welded joints, economy in the use of steel, methods of testing and possibilities for the future.

How shapes can be cut from steel of varying thickness by means of the oxyacetylene cutting torch was described in a paper by C. E. Rhein, Linde Air Products Co., New York. This paper described the equipment which, provided with a suitable templet, is capable of reproducing the shape automatically. Machines of this type have been on the market for several years and are used in large boiler and fabricating shops where it is necessary to cut irregular sections in minimum time.

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## Announces Highway Bridge Design Contest

Several hundred students of engineering and architecture in colleges throughout the United States are participating in a competition sponsored by the American Institute of Steel Construction, 200 Madison avenue, New York, for the aesthetic design of a highway bridge. Preliminary judging by a jury of nationally known engineers and architects will be held on April 2, with final judgment deferred until May 1, when recipients of the three prize awards will be announced.

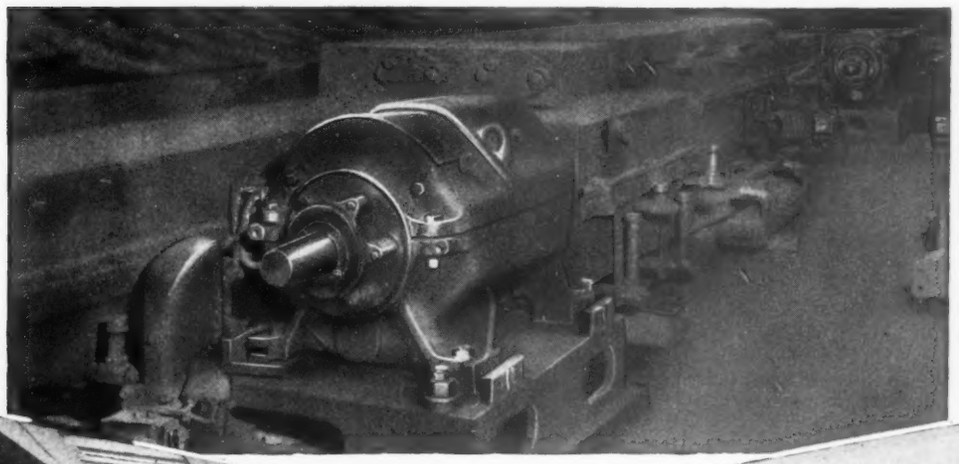
# 1. The world's largest wide-strip mill.
# 2. The first slabbing mill to use two separate reversing motors, for horizontal- and for vertical-roll drives.

# BOTH MOTORIZED by GENERAL ELECTRIC

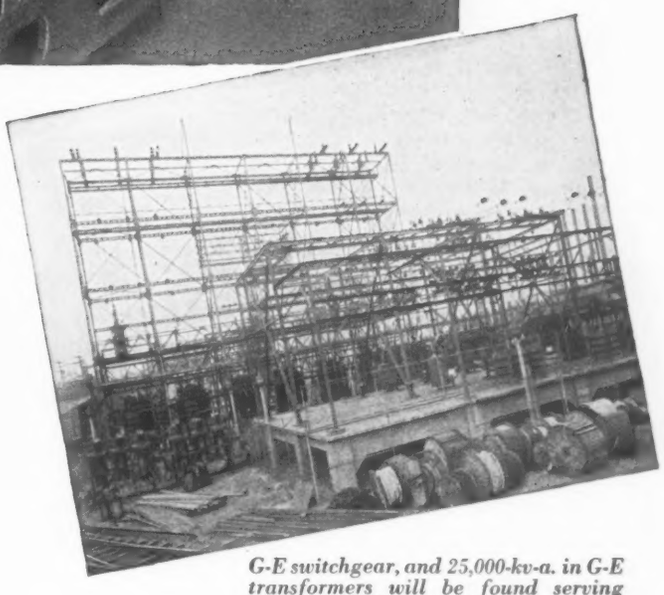
*Again* General Electric leads, this time in pioneering a unique slabbing-mill drive, and in the motorizing of a new wide-strip mill—the largest in the world—both within a single plant.

Everywhere throughout the steel industry, you will find enthusiastic acceptance of General Electric equipment, and confidence in General Electric's ability to design and build dependable motors and control for every power need of the modern mill.

*G-E Type MD motors driving furnace delivery table, Wheeling Steel Corporation, Steubenville*



*G-E magnetic-control panels for auxiliaries, Wheeling Steel Corporation*

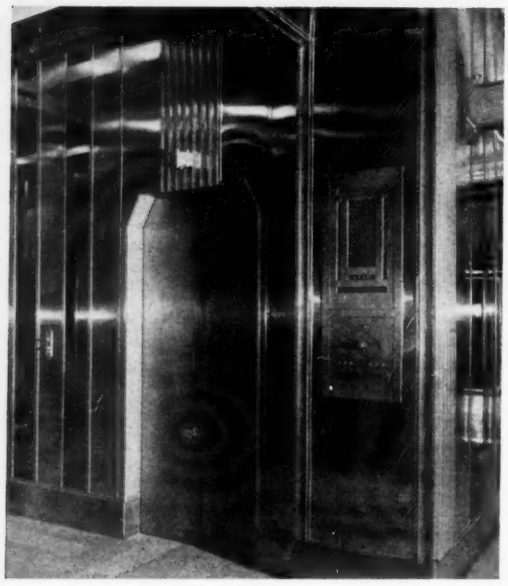


*G-E switchgear, and 25,000-kv-a. in G-E transformers will be found serving efficiently and dependably the Steubenville, Ohio, mill of Wheeling Steel Corporation*

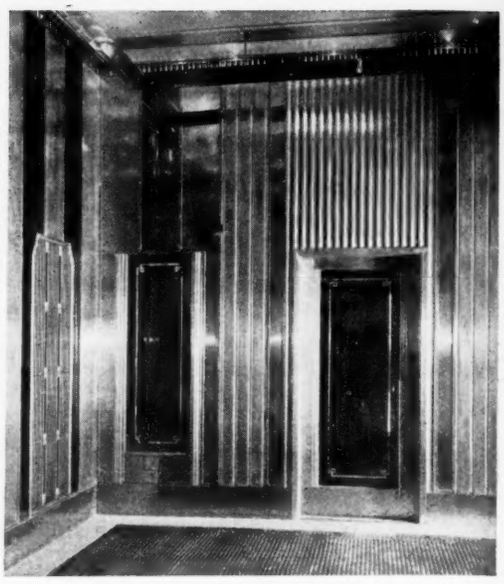
200-436

# GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES



*CONTRAST of bright chrome-nickel steel with dark steel-blue glass in the La Salle-Wacker building, Chicago. An elevator alcove is shown at the left and a corner of the lobby at the right*



# Striking Interior Effects Are Furnished by Alloy Steel

BY L. E. BROWNE

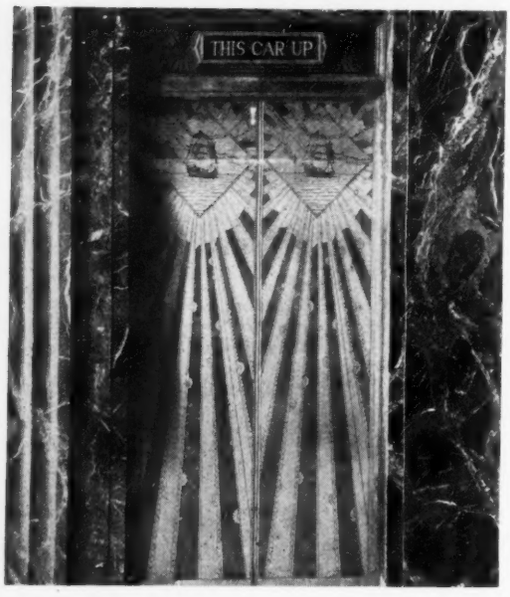
Editorial Representative, STEEL

ORIGINALITY in the use of metals, especially the recently developed chrome-nickel corrosion-resisting steels for interior decoration in large buildings is being demonstrated increasingly by leading architects of the country. While application of this metal has been confined principally to office building similar opportunities are presented by apartment houses, hotels, and public buildings. One of the first designs employing chrome-nickel steel, in fact, was an interior finish for an apartment house loggia, the creation of Raymond M. Hood, architect. This design was executed in chrome-nickel steel produced by Allegheny Steel Co., Brackenridge, Pa., and was exhibited at the Metropolitan Museum of Art, New York.

Elevator and corridor doors of the new 50-story Irving Trust Co. building, 1 Wall street, New York, are decorated with chrome-nickel steels. Doors are finished in dark green lacquer with two vertical strips of steel running the height of the doors. The alloy steel is rolled in a crimped form to give further contrast to the flat lacquered surface of the door. A "kick" plate of the metal also has a decorative, as well as practical purpose, and both have been carried out by making the base of the lobby walls of the same material, which is not affected by cleaning compounds.

Another outstanding example of the interior use of metal for ornamental purposes is the lobby of the La Salle-Wacker building, Chicago. In this building, the work of Holabird & Root and A. N. Rebori, architects, the lobby walls are covered with paneling of chrome-nickel steel and dark steel-blue glass, in alternate vertical panels, with a cornice of the same alloy. The metal was used also for the base and for the ceiling in the elevator alcoves. Two accompanying illustrations show the striking effect produced.

The metal panels are 16 inches wide




*ETCHED chrome-nickel steel elevator doors (left) in the lobby of the Mariner Tower building, Milwaukee, contrasting sharply with the dark marble walls. Alternate panels of plain Butler finish and etched designs carry out the motif in the cab interiors (right)*

and 14 feet high, and the alternating glass panels are of the same dimensions. Strips of the alloy about 1 inch in width hold the metal and glass panels in place. The metal in this case is highly polished. The cornice is done in a classic Greek style, requiring intricate forming, and the successful result indicates the practicability of shaping these corrosion-resisting alloys into involved designs, granted proper equipment and knowledge of the material by the fabricator.

**Etched Surfaces Pleasing**

A different use of a chrome-nickel steel for interior work is seen in the lobby of the new Mariner Tower, in Milwaukee, for which Weary and Alford, Chicago, were the architects. Here the lobby walls are of dark marble selected for rather elaborate figuring, and the elevator doors are of chrome-nickel steel. These doors are etched in a ship design, appropriate to the name of the building. In this case, the etched surface gives a matte finish and the dull silver-color of the doors contrasts with the dark marble. Elevator cabs have interior finish of the same metal, in alternate panels of plain Butler finish and a smaller replica of the etched design seen on the doors. These effects also are shown in accompanying illustrations.

One of the earliest examples of the interior use of these alloys was the Onesto hotel, in Canton, O. Here a cornice and paneling of chrome-nickel steel were used in the dining room and the front of the registration desk was trimmed with same material.

The designs for the new Earl Carroll theater in New York, call for the most extensive use of the alloy for interior decoration thus far attempted. The designer of the theater interior is Joseph J. Bobolnay, architect of the Hungarian Parliament buildings and of several notable theaters on the Continent. His conception for the interior of the Earl Carroll theater is in black and silver, the black being furnished by black velvet and the silver by chrome-nickel steel, with a color scheme, variable at will, furnished by hidden colored electric bulbs.

A number of the ideas developed by Mr. Bobolnay in this theater are likely to have much influence on the architects both of other theaters and of various types of buildings. The strong contrast he obtains by the use of materials so divergent in texture and finish as well as in color as black velvet and a matte-finished metal is an interesting feature of his scheme. Furthermore the designer has worked out the form of the metal in such a way as to create shadows of varying intensity, thus adding to the variety of the walls. The doors—there are some 16 of them in the auditorium and lobby—are of chrome-nickel steel in an elaborately etched design; another contrast with the black velvet.

# Galvanized Sheets Finding Use as Cribbing for Retaining Walls

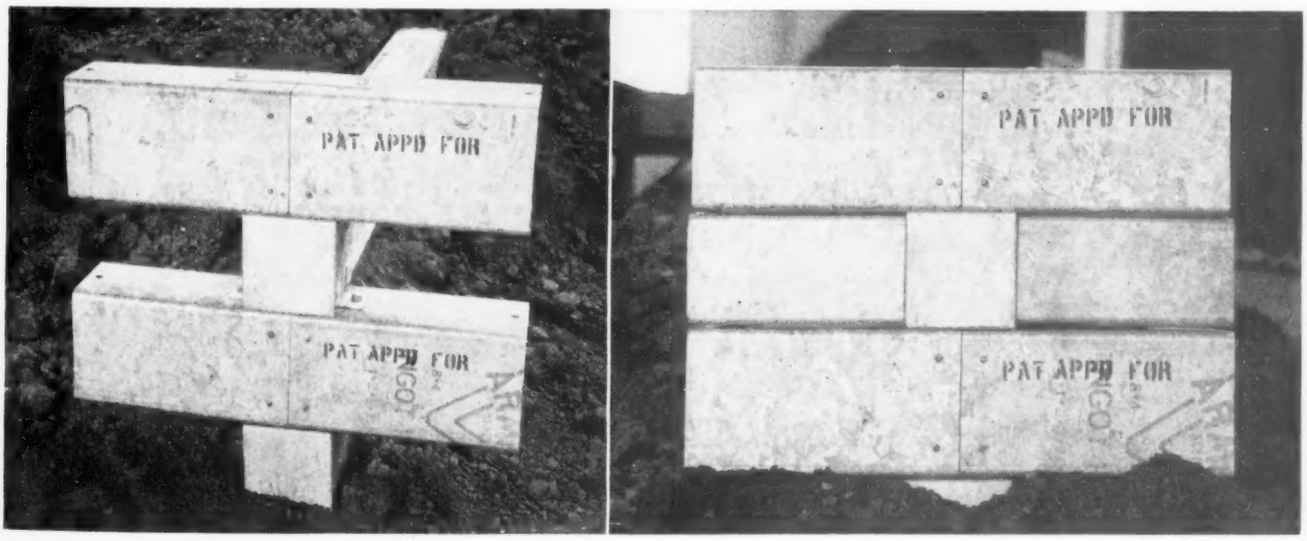
ANOTHER new use for sheet metal, that of cribbing for retaining walls, has been introduced by the American Rolling Mill Co., Middletown, O. The new metal cribbing, shown in the accompanying illustration, is made from ingot iron, and is of simple but effective design. The wall is built up from standard formed galvanized sections, either 6 or 8 feet long, and held together by a sturdy interlocking device. Exhaustive experimental tests have been made for compression, shearing and bending of the units, both separately and when locked together. Corrosion resistance is afforded not only by the metal itself but also by the galvanized coating.

Advantages of the new type of construction include economy of installation as well as greater speed; the wall is in service as soon as installed; the units are light weight, reducing transportation costs and expense in handling; eliminates necessity for special handling equipment; and may be erected by unskilled labor. Because the units are light weight, they can be placed on foundation soils which would require a pile or caisson subfoundation if a heavy mass wall were constructed.

The new design offers considerable flexibility. The cribbing can be dismantled and relocated without the loss of any units, the height of the wall can be increased if it becomes necessary to raise the grade, and the face of the wall can be curved if desired. Where closed face walls are desired, galvanized metal filler plates can be inserted between the units to prevent the backfill from infiltering.

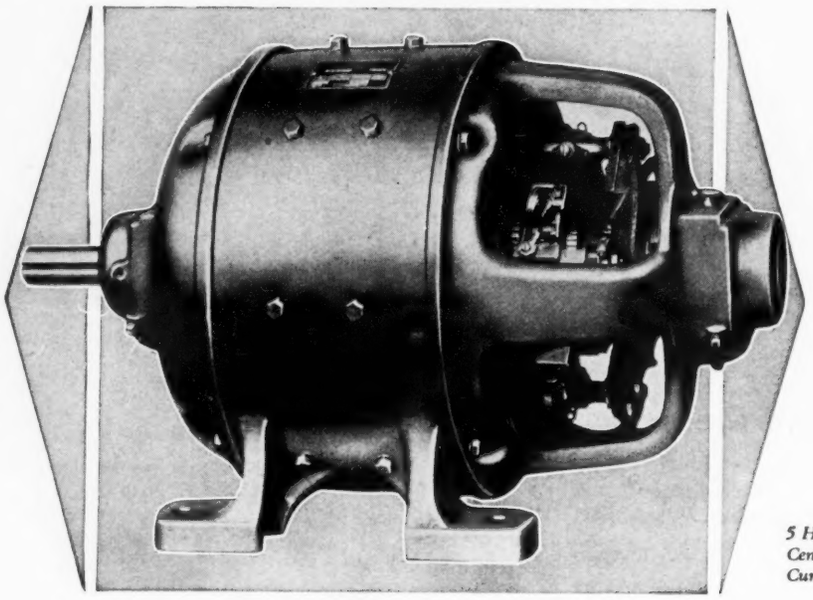
It is believed that the cribbing will find use for raliroad and highway retaining walls, for bridge wingwalls and for river and harbor bank protection work. Large sections can be bolted together and submerged to provide underwater crib foundations.

Distribution of the cribbing is in the hands of the Ingot Iron Railway Products Co., Middletown, O.




*(Left)—A small section of sheet metal cribbing. The 6-foot header extending into the earth is full length, but the spreaders are abbreviated for convenience. Standard headers are 6 x 6 x 72 inches and the spreaders are 6 x 8 x 96 inches. (Right)—Filler plates can be installed to prevent the backfill from filtering through*

THEY KEEP A-RUNNING



*5 Horse Power Century Direct-Current Motor*

# CENTURY
## Constant Speed
# DIRECT-CURRENT MOTORS

The service continuity of these Constant Speed Direct-Current Motors is the result of 37 years spent by the Roth works in perfecting D. C. Motors that "Keep a-Running" in all types of applications.

These motors are also supplied for variable or adjustable speed operation, for general purpose and special applications—with either shunt, compound or series windings for all commercial voltages—in open-type, drip-proof, semi-enclosed and fully-enclosed dust-tight construction.

Built in standard sizes from ¼ to 100 horse power.

**CENTURY ELECTRIC COMPANY**
1806 PINE STREET · · ST. LOUIS, MO.
*40 U. S. and Canadian Stock Points and More Than 75 Outside Thereof*

SINGLE PHASE, THREE PHASE, AND DIRECT CURRENT MOTORS

Century MOTORS

MOTOR GENERATOR SETS, ROTARY CONVERTORS, FANS AND VENTILATORS

FOR MORE THAN 27 YEARS AT ST. LOUIS

Velocipedes

◆

188th Article

# Large Uses of Steel in Small Ways

MORE than 600,000 velocipedes valued at about $2,500,000 are manufactured annually in the United States, according to department of commerce reports. This includes tricycles and "scooters." The output is equivalent to one to every three children born in this country.

The velocipede industry represents an important group of steel consumers from a tonnage and quality standpoint. The velocipede varies in design from a rugged simple product made to sell at a low price up to a quality, ball bearing vehicle.

With the exception of leather seats, rubber tires, pedal treads, handles and a few malleable castings, the entire construction of the typical velocipede is steel. The weight of the steel in each vehicle varies from about 14 pounds to nearly 25 pounds, but the average, according to one large manufacturer, is close to 18 pounds.

The steel is in the form of cold finished bars, seamless tubing, wire and stampings. The proportion of each of these steel products varies so much from one design to another that it is difficult to strike an average. One authority states the development of seamless steel tubing with its accompanying lower cost has increased the proportion of this class of steel and that it now constitutes about 25 per cent of the total. Assuming an 18-pound average, the total tonnage of steel represented by the annual production of velocipedes is 6400 tons.

In one type of velocipede the fork for the front wheel is malleable cast iron threaded at the top for fastening to a short upright piece of seamless tubing. This upright piece carries the handle bar and is joined near its center to the main frame of the vehicle. The two parts are usually joined by welding.

On high-grade velocipedes the joints frequently are malleable castings. One such casting holds the handle bars, another holds the saddle and a third and fourth may be used for the T joints in the frame. The hubs are made of strip steel stampings, and the handle bars are seamless tubes.

### Wire Used in Spokes

Spokes are nearly always made of wire. These spokes are hooked at one end and threaded at the other. The hooked end is inserted through a hole in a circular steel stamping which forms a side of the hub. The threaded end passes through a hole in the rim and is tightened by means of a nut on the back side.

Rims for the wheels frequently are made of cold-rolled strip steel which is cut to length, rolled into circular shape and then lap welded by an electrical method. In some instances the spokes are riveted in place in the rim by a machine.

The pedal frame is of cold-rolled strip steel and steel bolts are frequently used to hold the pedals in place on the pedal arm which itself may be seamless tubing, or more frequently a solid steel bar. Coiled steel wire springs hold the rear part of the saddle in position and other parts of the saddle assembly include curved lengths of round spring steel, soft steel stampings, for the saddle clamp, a cold finished round steel bar for the saddle post and various bolts and stampings.

The spokes for the average velocipede usually are made of 11 or 12 gage steel wire. The cold-rolled strip steel used for stampings usually is 16, 18 and 22 gage.

The frame of the velocipede when complete is dipped in enamel and then baked. Many of the parts on velocipedes are nickel plated.

## Testing Materials Society Announces Exhibition

An exhibit of testing apparatus and machines will be conducted in conjunction with the thirty-fourth annual meeting of the American Society of Testing Materials to be held in Hotel Stevens, Chicago, June 22-26. This exhibit is limited to apparatus, equipment and machines used in the testing of materials.

Recording and control equipment, if used in testing, may be shown in the exhibit; but it is not intended to include devices and machines used only in processes of production, since these are outside the field of the society's activities. The limiting capacity of testing machines has been set at approximately 100,000 pounds. The show will be held in the Hotel Stevens exhibition hall, which provides every facility for operating equipment, including gas, compressed air, electricity, steam and water.

Features of the technical meetings will be a symposium on effect of temperature on the properties of metals and another on malleable castings. Dr. A. Nadai, research engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., will deliver the Edgar Marburg lecture on the subject, "Phenomenon of Slip on Plastic Materials."

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*In India Steel Sheets Are Used as Prayer Rugs*

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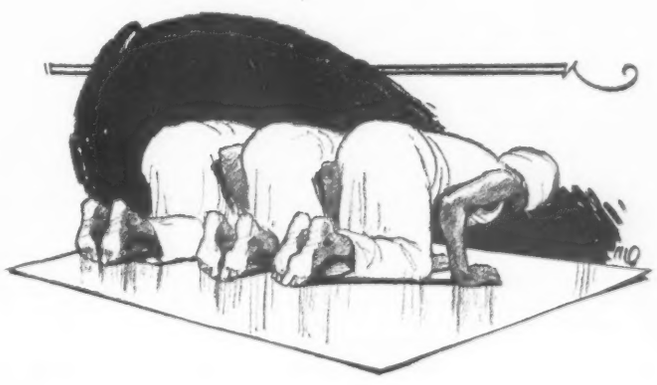


# Foundrymen Arranging Program for Chicago Convention and Show

PLANS are rapidly nearing completion for the thirty-fifth annual convention of the American Foundrymen's association to be held in Hotel Stevens, Chicago, May 4-7. The exhibition, in which some 135 manufacturers of foundry equipment and accessories will be represented, also will in the hotel, thereby housing all activities under one roof. In addition to the exhibition hall, the ballroom will be used for exhibit purposes.

Technical papers cover a wide range of subjects, dealing with every major phase of metal founding. A considerable part of the four days' program will be devoted to discussion of problems relating to gray iron, malleable, steel and nonferrous castings, although general interest sessions are also scheduled.

A partial list of papers, classified according to subject, has been announced as follows:

*Steel Castings*

"Chemical Composition as Employed for Classifying Carbon and Alloy Steels for Castings," by Maj. R. A. Bull, Electric Steel Founders' Research Group, Chicago.
"Some Metallurgical Points on Acid Open Hearth and Electric Steel for Castings," by F. A. Melmoth, Detroit Steel Castings Co., Detroit.
"Centrifugal Casting of Guns," by Col. T. C. Dickson, Watertown Arsenal, Watertown, Mass.
"A Comparison of Synthetic and Natural-Bonded Molding Sands for Steel Foundries," by H. J. Cole, General Electric Co., Schenectady, N. Y.
"Interrelationship of Pin Hole Trouble and Low Ductility Problems," by George Batty, Steel Castings Development Bureau, Philadelphia.

*Malleable Iron*

"Thermal Balances of Malleable Melting Furnaces and Production Costs," by J. H. Hruska, Berwyn, Ill.
"High Tensile Materials," by Dr. Anson Hayes, Industrial Furnace Corp., Buffalo.
Report on Malleable Furnace Refractories, by J. R. Allan, International Harvester Co., Chicago.

*Foundry Costs*

"Weak Points in Cost Systems Which Permit Leakages," by E. A. Baker, Ellery A. Baker & Co., New York.
Report of committee on Required Estimating Data.
Report of committee on Methods for Estimating Molding Costs.

*Apprentice Training*

"Getting a Community Apprenticeship Program Under Way," by H. S. Falk, Falk Corp., Milwaukee.
"Related Instruction," by S. M. Brah, Tri-City Manufacturers' Association, Moline, Ill.

*Sand Research and Control*

"Effect of Heat on the Permeability of Facing and Core Sands," by W. M. Saunders, Providence, R. I.
"Shape of Sand Grains," by Dr. H. Ries and G. D. Conant, Cornell university, Ithaca, N. Y.
"Some Observations on the Use of Synthetic Sands," by L. B. Knight, National Engineering Co., Chicago.
"Relation Between Sand Grains and Strength of Sands," by Dr. H. Ries and H. V. Lee, Cornell university, Ithaca, N. Y.

*Gray Iron*

"An Inclusion in Cast Iron and its Relation to Manganese and Silicon Content," by F. J. Cook, Birmingham, England.
"The Microscope as a Tool in Investigating Cast Iron," by R. M. Allen, Bloomfield, N. J.
"Gating," by Max Kunionsky, Lynchburg Foundry Co., Radford, Va.
"A Contribution to the Study of the Part Played by Phosphorus in Cast Iron," by J. Dessent and M. Kagan, Liege, Belgium. (Exchange paper of the Belgian Foundry Technical association.)
"Factors Which Influence the Surface Quality of Gray Iron Castings," by W. G. Reichert and D. Woolley, Singer Mfg. Co., Elizabethport, N. J.
"Effect of Atmospheric Moisture on Cupola Operation," by N. A. Moore, Piston Ring Co., Muskegon, Mich.
"Electric-Process Iron for Cylinder and Cylinder-Head Castings," by H. E. Bromer, Standard Foundry Co., Racine, Wis.
"Melting Gray Iron and Malleable Iron in the Indirect-Arc Furnace," by J. H. Vogel and J. C. Bennett, York Ice Machinery Co., York, Pa.
"Testing Cast Iron," by Major Nicalau, Paris, France. (Exchange paper of French Foundry Technical association.)
"Manufacturer and Use of Cupola High-Test and Alloy Irons in Machine Tool and Jobbing Foundry," by L. M. Sherwin and T. F. Kiley, Brown & Sharpe Mfg. Co., Providence, R. I.

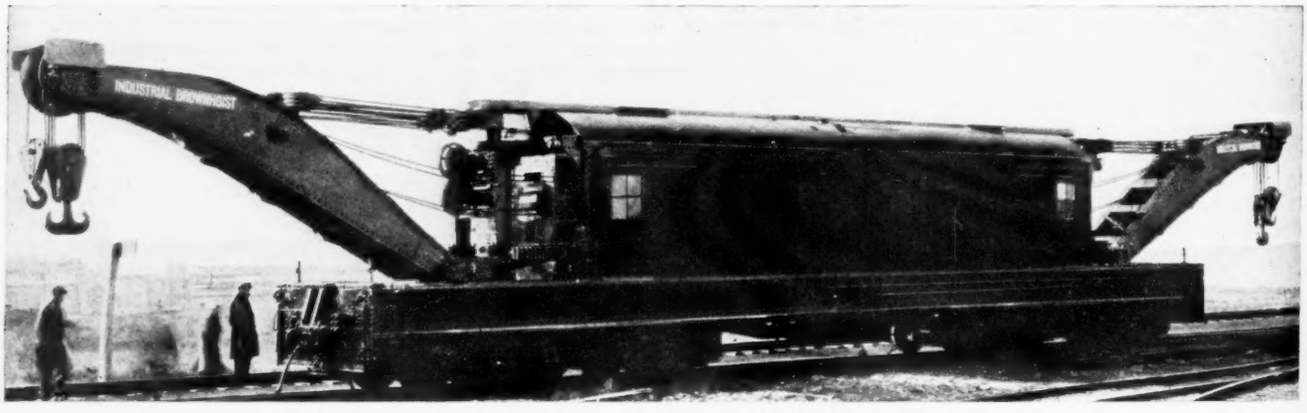
## Paris Host to Foundrymen's Congress in 1932

By arrangement of the Association Technique de Fonderie de France, the fourth international foundrymen's congress will be held in Paris, France, Sept. 14-20, 1932. Sessions of the congress will be conducted at the Ecole Nationale d'Arts et Metiers and the exhibition at the Parc des Expositions. Numerous visits to foundries and metallurgical work in the Paris district and a tour through the industrial region of France will be arranged.

The French committee, which has charge of preliminary arrangements, is anxious that a representative party of American foundrymen shall attend the congress and exhibition, recalling the hospitality extended to French foundrymen on occasion of the second international congress in Detroit in 1926.

## Plans Well Under Way for Metal Congress and Show

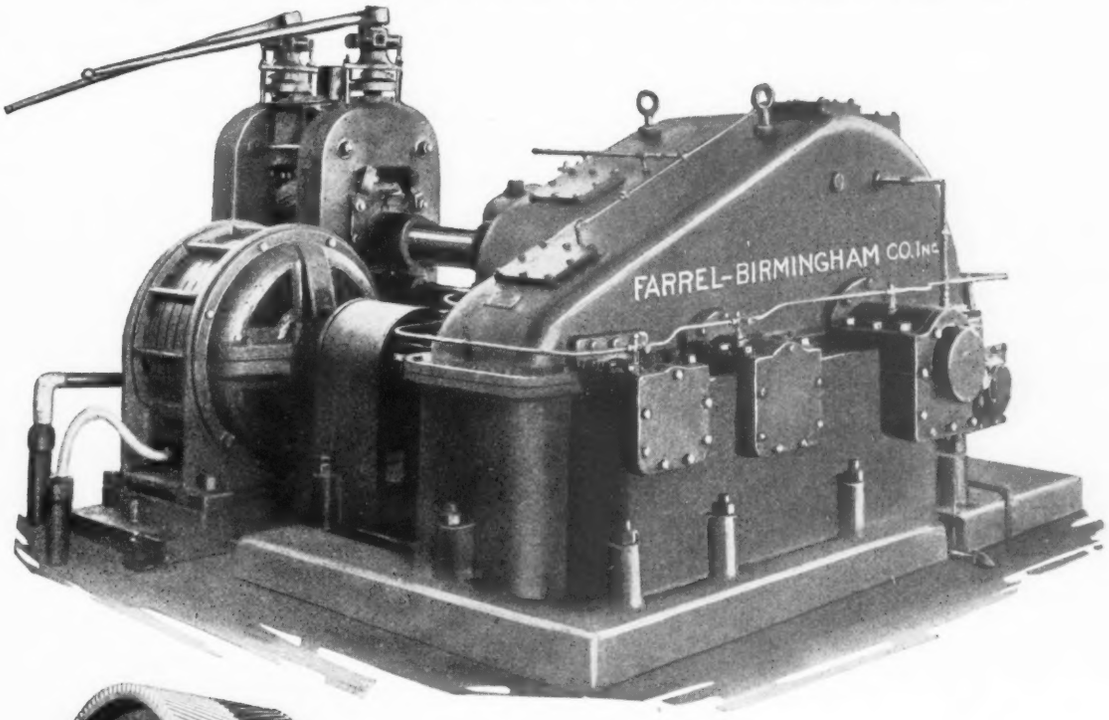
Plans are well under way for the thirteenth annual National Metal congress and exposition to be held




*RAILROAD WRECKING CRANE IS GAS-ELECTRIC POWERED*

*Designed to work in underground tunnels where clearances are close, this special gas-electric powered double-end wrecking crane, built by Industrial Brownhoist Corp., Bay City, Mich., will be placed in service at the Cleveland Union Terminal. The crane has a capacity of 105 tons at each end, with three independent power units—two 225-horsepower gasoline engines connected to 400-volt generators, and one 208-cell storage battery. All crane movements are operated electrically and the unit will develop a speed of approximately 33 miles per hour under its own power*

# GEAR SPECIALISTS SHOULD BUILD MILL DRIVES AND PINION STANDS



The trend of mill drives toward higher speeds necessitates a thorough understanding of the theory of gear tooth forms, and of their reproduction in metal. The Farrel-Sykes continuous tooth herringbone gear has established a new standard of accuracy in gearing and approaches more closely than any other type of gear the ideal tooth contour.

When the gear cases are designed by specialists, smooth reliable and highly efficient operation is assured.

*The "Gear with a Backbone"*

**FARREL-BIRMINGHAM CO., Inc.**

SUCCESSOR TO
FARREL FOUNDRY & MACHINE CO., ANSONIA, CONN., AND
BUFFALO, N. Y., AND BIRMINGHAM IRON FOUNDRY OF DERBY, CONN.
ADDRESS REPLIES TO THIS ADVERTISEMENT TO BUFFALO PLANT
322 VULCAN ST., BUFFALO, N. Y.

in Boston, Sept. 21-25, according to W. H. Eisenman, secretary of the American Society for Steel Treating, the principal sponsoring organization. Commonwealth Pier will be used for the show, the pier being conveniently located and affording a large amount of floor space.

As in past years several national technical organizations will co-operate in the congress. Among them are: American Welding society, iron and steel and institute of metals divisions of the American Institute of Mining and Metallurgical Engineers, iron and steel and machine shop practice divisions of the American Society of Mechanical Engineers, and Gas Products association.

## Issues Code for Concrete Floor Joist Designs

A code of standard practice for concrete joist construction floor forms is being distributed by the forms department of the Concrete Reinforcing Steel institute, Tribune Tower, Chicago. This code, a 4-page printed pamphlet, will govern conditions not covered by engineers' and architects' plans and specifications. It also gives valuable information as to practices which are standard within the industry and which may be used by specifying authorities to decrease the cost of their concrete joist construction floor designs when either metal or wood filler forms are used.

## Designs Continuous Mill for Rolling Copper Rods

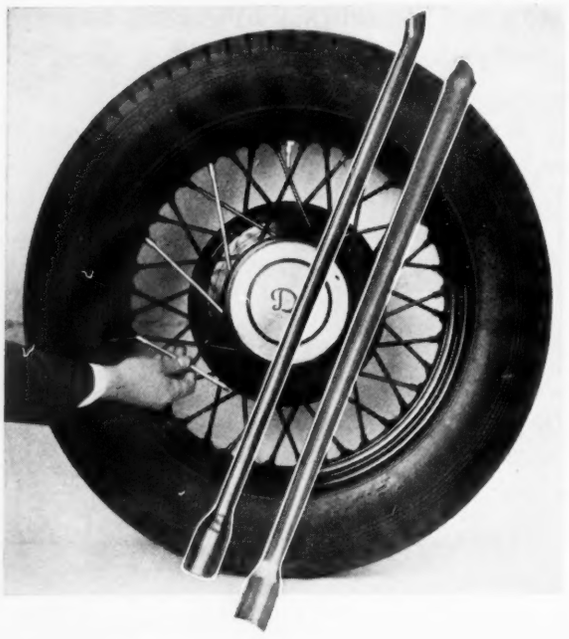
A new continuous type copper rod mill, which has capacity for the production of between 50,000 and 60,000 pounds of ¼-inch round rods per hour, has been built by the United Engineering & Foundry Co., Pittsburgh. The mill is designed to operate profitably on a small production basis, showing better costs than the old type Belgian copper rod mill, which produces from 25,000 to 28,000 pounds of rods per hour.

The company also has designed a mill operating on a capacity of 10,000 to 15,000 pounds per hour, and at a lower cost of production than the old type Belgian mill. Heretofore, the older type of Belgian mills could not be operated profitably on less than 15,000 pounds per hour because the labor cost exceeds the limits of profitable operation.

The new continuous type of mill does not entirely eliminate labor, but reduces it to a minimum, as the mill is equipped with automatic repeaters, coilers, etc.

## British Metals Institute Elects New Officers

At the twenty-third general meeting of the British Institute of Metals held in London, March 11-12, Dr. Richard Seligman, director, Aluminum Plant & Vessel Co. Ltd., London, was elected president of the council for 1931. Vice presidents were: W. R. Barclay, Henry Wiggin & Co. Ltd., Birmingham; Lt. Col. Sir Henry Fowler, chief mechanical engineer, London, Midland & Scottish Railway; Dr. A. G. C. Gwyer, research laboratories, British Aluminum Co. Ltd., Warrington; Prof. D. Hanson, University of Birmingham; Dr. R. S. Hutton, director, British Nonferrous Metals Research association; and Sir Reginald W. Skelton, engineer vice admiral, the Admiralty, London.



*CHROME - NICKEL corrosion - resisting steel is being used as coverings for wire spoke automobile wheels. These coverings are made of 0.010-inch steel to fit the contour of the ordinary wire wheel spoke from rim to hub shell. They encase more than half the circumference of the spokes and snap into place, holding so firmly that they are removed only with difficulty. The product was developed by the Budd Wheel Co., Philadelphia.*

## Steel Treater Chapters To Hold Annual Meeting

Members of the Boston, Rhode Island, Worcester, Springfield, New Haven and Hartford chapters of the American Society for Steel Treating are preparing for a spring sectional meeting to be held in Hotel Bond, Hartford, April 14. At a technical session in the morning, E. W. Page, General Electric X-Ray Corp., Chicago, will present a paper "The X-Ray in the Metal Industry," and Dr. V. O. Homerberg, technical director, Nitralloy Corp., New York, will present a paper, "Recent Developments in Nitriding."

The afternoon will be spent in visiting the plants of Pratt & Whitney Co., Pratt & Whitney Aircraft Co., and Chance-Vought Corp. The meeting will conclude with a dinner in the evening at which Dr. Zay Jeffries, past president of the society, will address the group on "The Metallurgist in Industry." An attendance of 500 is expected.

## Clausen Medal Presented

Under auspices of the American Association of Engineers and with the co-operation of other national engineering societies, an engineers dinner was given at Hotel Astor, New York, March 11, at which time the first Clausen gold medal was presented, to Dr. John Alexander Low Waddell, internationally known bridge builder, for distinguished service for the welfare of engineers, social and economic.

Dr. David B. Steinman, consulting engineer, was toastmaster, and Francis H. Sisson, vice president, Guarantee Trust Co., New York; Col. Arthur Woods, chairman of the Prosser committee on unemployment; Dr. G. M. Butler, dean and director of the college of mines and engineering, University of Arizona, Tucson, Ariz.; and Hon. Albert Goldman, commissioner, department of plants and structures, New York, were other speakers.

## Develops Ingot Mold Iron

Patent rights recently were issued to the Vulcan Mold & Iron Co., Latrobe, Pa., covering ingot molds made of cupola cast iron which contains sulphur under 0.05 per cent and has high resistance to cracking through sudden expansion. A suitable desulphurizer such as soda ash is added to the molten metal in sufficient quantity to reduce the sulphur content to the desired percentage. It is claimed the low-sulphur cupola iron molds fail only by the normal process of growth and fire cracking.

# Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

## USES:

### 18-8 Ferrous Alloy

*Corrosion-resistant alloys of construction, discussed by J. A. Lee, in Chemical & Metallurgical Engineering, March* 1931, *p.* 153, 2 *pp.*, 1 *illust.*

During the past two or three years the 18 per cent chromium, 8 per cent nickel, ferrous alloy has become increasingly popular among sulphite mill operators and today its applications include centrifugal pump casings, shafting, impellers and valves. Engineers realize in the cases where equipment, fabricated of this metal, has failed in a short period, the failures have not been due to the chemical formula of the alloy but to the lack of knowledge of its characteristics by producers, fabricators and paper-mill engineers. Improper heat treatment and stress, resulting in intercrystalline corrosion and disintegration of the metal, and porous castings account for most failures. An alloy with a few per cent of molybdenum has been in use in many mills for some time and it generally is supposed to be superior to the straight 18-8 material. This alloy recently has been modified by a reduction in the carbon content to less than 0.07 per cent. It is claimed that no heat treatment after welding is required.

—Steel 4-2-31

## PRODUCTION:

### Inclusions in Steel

*An investigation of inclusions and their effect on the impact strength of steel, by A. B. Kinzel and Walter Crafts, a paper presented at the annual meeting of the iron and steel division of the American Institute of Mining and Metallurgical Engineers in New York, Feb* 16-19, 31 *pp.*, 19 *illusts.*, 14 *tables.*

A comprehensive study of inclusions in steel substantiates certain general conclusions, as follows: The dynamic strength of steels is qualitatively reduced by visible inclusions or factors directly proportional to them; the magnitude of the effect of inclusions on the dynamic strength increases with the hardness of the steel; factors other than visible inclusions have an important influence on the dynamic strength of steels, and are comprised in the term "body."

Body is influenced markedly by minute inclusions whose size is less than 0.005-millimeter. Visible inclusions are directly proportional to the ratio of extracted inclusions to sulphides in the steels studied. The "total length" of inclusions per square millimeter is a satisfactory measure of the cleanliness of steels. The tensile-impact test is a satisfactory measure of the dynamic quality of steels. The present commercial inclusion rating is not a reliable measure of the cleanliness or dynamic strength of stels, although it does give satisfactory indications in many instances.

—Steel 4-2-31

## FABRICATION:

### Commercial Lapping

*Progress of turning, grinding and lapping discussed in Grits and Grinds, February* 1931, *p.* 1, 8 *pp.*, 1 *table*, 6 *illusts.*

The most important fields for lapping are classified and the principal characteristics of hand lapping compared with machine lapping. Early tests made at a large automobile factory using ground and lapped pins, showed that after a few hours run the ground pins had lost 0.0003-inch diameter while the lapped pins showed no measurable difference in size. A score or two pieces are lapped simultaneously by mechanical means in less time than is required for one piece by hand methods.

—Steel 4-2-31

### Forging Practice

*Hammering and pressing in a tool and alloy steel plant, discussed by E. J. Poole Jr., in Forging and Heat Treating, March* 1931, *p.* 246, 4 *pp.*, 3 *illusts.*

A 14,000 to 16,000-pound hammer best adapts itself for finishing and cogging of alloy steels. Hammers should be operated with a steam pressure of 75 to 125 pounds per square inch. They also may be operated with compressed air from 100 to 110 pounds per square inch. The air consumption varies from 16 to 30 cubic feet per 100 pounds of falling weight, depending upon the number of hammers in service. The author discusses the proper selection of hammers, the energy exerted by a hammer blow, finishing limits and standard rates of production.

—Steel 4-2-31

## MISCELLANEOUS:

### Ultra-Violet Lamps

*Description of some of the latest ultra-violet units available for industrial use, by L. C. Porter, in Electrical Production Magazine, February* 1931, *p.* 7, 2 *pp.*, 2 *illusts.*

Several years of research work have resulted in the development of the S-1 type of ultra-violet lamp bulb, consisting primarily of two tungsten electrodes connected by a tungsten filament and mounted in a special glass bulb containing a small amount of mercury. The lamp requires 9.5 amperes at 30 volts, to heat the filament, the heat vaporizing some of the mercury, thus striking an arc between the two filament coils. When the arc is struck the voltage drops and the current rises, the arc moving up on the electrodes. Special welded sockets with ample ventilation provided around the lamp base are used.

Reflectors must be made of some material which will reflect the ultra-violet energy, such as aluminum or chromium. The reflector should have a matte surface for proper diffusion. Low cost and simplicity of operation are essential requisites of the ultra-violet lamp for industrial use.

To determine the efficiency of various units tests must be made of the ultra-violet output, its distribution and intensity. Two principal methods are employed. One is by means of photoelectric cells in connection with quartz monochrometers; the other is a special attachment for the ordinary Macbeth illuminometer.

—Steel 4-2-31

# Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

## Congress on Materials Handling Will Promote Improved Methods

PARALLELING the unusual engineering activity in the field of production machinery which has been going on for several months, equally active development work has been under way among builders of materials handling equipment of all kinds.

For the same reason that machine tool exhibitions always focus sudden attention upon improvements which actually have occurred over a considerable length of time, it is probable that this month will be marked by realization of a "new era" in materials handling. This will come about through the focusing of the joint attention of builders and users of materials handling equipment by the exposition and engineering congress will be held in Cleveland, April 13-17 inclusive, during which time a technical program of unusual scope will be carried out.

The following pages give something of an advance impression of the ingenuity which has found expression in equipment for speeding production by getting material to and from processing stations in minimum time and with minimum effort. Rugged construction, smooth speedy operation, convenience of control and ready adaptability to existing industrial conditions characterizes this equipment to a noticeable degree, and this condition is certain to be a predominant feature of the machinery which will be exhibited at the Cleveland show.

**Standardization Desirable**

When the subject of standardization of materials handling equipment is brought up, the builders of such equipment point to lack of standardization of conditions under which the equipment must be used as the greatest hindrance to rapid progress in that direction. They admit the desirabilty of standardization and point out that with it would come distinct savings in cost of the equipment to users, as well as decidedly more convenience in installation, both in new and old plants.

It is certain that the exposition and congress will afford an excellent opportunity for material handling experts to meet on common ground to discuss problems of mutual interest. This should result in accelerated progress in design and application—particularly along the line of agreement upon certain fundamental standards.

The active participation in the congress of several national engineering and management societies gives to this event prestige which assures attendance by a large number of leading engineers and industrial executives from all over the country. The design of industrial plants for the most complete and effective application of modern mechanical burden bearers will become more common as a result.

◆

## Crawler-Type Loader Uses Helical Digging Unit

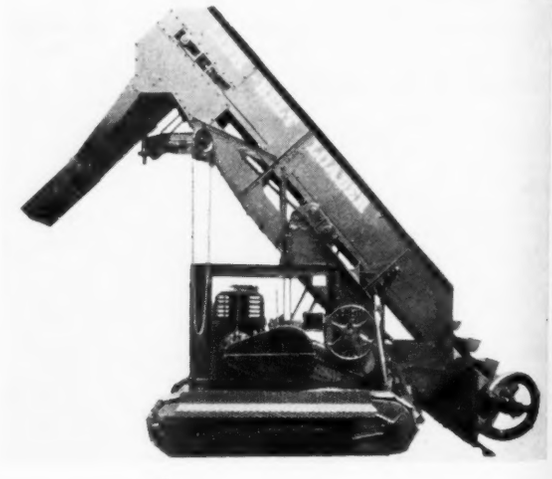
Link-Belt Co., Philadelphia, has added to its line of portable material handling equipment a heavy-duty crawler loader which is carried on cast steel chain tread crawlers. This machine shown in the accompanying illustration, has a rated capacity of 1¾ cubic yards per minute when handling such materials as run-of-mine bituminous coal, coke, etc.

The power plant can be either a 30-horsepower governor controlled gasoline motor, or a standard 20-horsepower electric motor. Drive is through roller chains running on cut steel sprockets. A three-speed transmission gives the crawlers speeds of 30 feet per minute or 66 feet per minute in the digging direction, and 27 feet per minute in reverse. Driving machinery is housed in a dust-tight casing and is lubricated by oil bath.

**Improved Digger**

An improved type of cast steel helical ribbon feeder digs, lift and conveys material to the buckets, cutting a swath 7 feet 7 inches wide. There are 35 malleable iron buckets, 19½ inches wide, closely spaced on the double strand steel elevator chain. The chute swivels through 180 degrees, being controlled from the operator's platform. The chassis is built up of heavy steel angles, plates and channels riveted together, with two rugged steel castings supporting the chassis and connecting it to the axles. Auxiliary equipment can be supplied, including a vibrating screen loader for cleaning coke, and a measuring hopper.

In the design of the machine much attention has been paid to the nature and location of the controls, to



*Heavy duty loading machine built by Link-Belt Co. moves itself about on crawler treads. It is equipped with a wide helical feeder and will handle 1¾ cubic yards of material per minute*

# Your Welding and Cutting Equipment always active

## —profitably!

There is always a production or maintenance problem in almost any plant, that could be solved more economically.

If either your production or maintenance is concerned with metal, oxyacetylene welding or cutting can usually make a real saving for you.

If you have oxyacetylene equipment, is it being used to full advantage? Aren't there operations in your production where the oxyacetylene torch would be a more satisfactory solution at less cost? What about worn or broken machine parts that could be reclaimed at small expense?

If you haven't oxyacetylene apparatus, there are pretty sure to be places where you could use it to advantage.

In either case it would be worthwhile to write or telephone your nearest Airco office listed, tell us what your business is, and ask for suggestions that would apply to it. No obligation of course.

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See Airco Booths 58 and 60, Clarence Young Airway National Aircraft Show, Detroit.

*Lift truck designed for low skids by Terminal Engineering Co.*

insure that one man can operate the machine with maximum safety and efficiency.

◆

## High Speed Electric Truck Elevates Low Skids

Terminal Engineering Co. Inc., 17 Battery place, New York, announces a new four wheel drive skid-handling truck. This machine, which is shown in the accompanying illustration, is small enough to operate freely in and out of ordinary box cars, yet it carries loads up to 3000 pounds in an overhung position.

The lowest type of skids can be used with this truck, their height needing only to be 2 inches below the platform. This enables them to be made economically from scrap lumber, 2 x 4-inch pieces being used on their flat sides as legs. By running these legs the full length of the skid, it is made more stable when stacked than those having four separate legs, one located at each corner.

**Fast Operation**

High travel and elevating speeds are provided. The four wheel, four motor drive allows speeds up to 10 miles per hour empty, and up to 9 miles per hour with a 1½-ton load aboard. Elevating speeds range from 25 to 40 feet per minute with standard motor but can be increased to a maximum of 60 feet per minute when a special high speed hoisting motor is used.

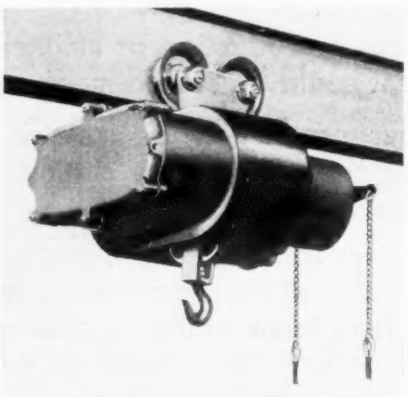
The storage batteries are carried in a steel compartment located over the wheels at the driver's end, thereby counterbalancing the overhung load. The hoist mechanism also contributes to this counterbalancing effect, the net result being that, when loaded, equalized traction is assured by all of the four driving wheels. Safety at high speed is assured by a number of features, including; automatic stop to limit upstroke of table, two independent sets of brakes—mechanical on two wheels and electrical on all four wheels, and location of all controls within outer edges of truck.

◆

## Electric Hoists Function in Restricted Spaces

Euclid Crane & Hoist Co., Euclid O., is marketing a new overhead trolley hoist of fully enclosed design. The hoist, shown in the accompanying illustration, is claimed to provide maximum speed with unusual compactness and resulting low headroom requirements.

Power is furnished by a heavy-duty electric motor, and all shafts are carried on heavy-duty roller



*Easy installation marks hoist built by Euclid Crane & Hoist Co.*

bearings. All load carrying members are of steel and a fully enclosed hook block is used. A positive automatic load brake keeps the load under absolute control at all times yet has no frictional resistance during the hoisting operation. When the motor stops, this brake sets automatically and the load can be lowered only by reversing the motor. A new type of motor brake stops the motor instantly when the controller is thrown into neutral position.

The trolley is designed to permit easy installation of the hoist either parallel with, or at right angles to, an I-beam, this being an important feature where close clearances must be taken into account. Three sizes are available, these being of 1, 1½ and 2-ton capacities. They are guaranteed for 25 per cent overload and the builder claims that they have successfully withstood 100 per cent overloads a wide range of test conditions.

◆

## Portable Cranes Will Enter Ordinary Doorways

Lewis-Shepard Co., Watertown station, Boston, has added a new line of portable cranes to its standard material handling equipment. These are built in four types, of which the accompanying illustration shows the most popular model in which both boom and main upright are hinged. The advantage of this hinged model is that it can be taken through any ordinary doorway and yet can be used to the full ceiling height.

A telescoping machine also has been designed which likewise will pass through the ordinary door and will reach to full ceiling height. Another is of hinged design with ability to swing through a full circle. The revolving mechanism likewise can be provided on the telescoping machine.

An important economy and maintenance feature of these cranes is that 90 per cent of their parts already are standard on the master stackers manufactured by this company. They can be furnished with hand power worm drive winch, with electric drive winch, or with air motor or gas engine. The ability of these machines to pass through ordinary doorways is particularly important in the case of older industrial plants. They can be furnished with hand power worm drive winch, with electric drive winch, or with air motor or gas en-

*Lewis-Shepard portable type crane is hinged to clear doorways*

gine drive where conditions require. Standard capacities up to 2000 pounds are stocked, and machines of higher capacities can be furnished on special order.

◆

## Bucket Conveyor Chain Has Manganese Steel Parts

Manganese Steel Forge Co., Philadelphia, has developed a new type of bucket conveyor chain with manganese steel rollers, rolled manganese steel side links, and forged and smooth-swaged manganese steel pins. Soft-steel angles are provided to which the buckets are fastened. A section of this chain is shown in the accompanying illustration.

The pins are swaged cold to accurate dimensions, a process which is said to give them a smooth, hard surface having exceptional wearing qualities. The pins have shoulders and are flattened at both ends so that, when fitted into oblong holes in the angles, they are prevented from turning. The ends of the pins are peened over to secure them to the angles, this being a solid method of construction which is said to maintain alignment of rollers and links and to insure accuracy of pitch and proper articulation even after long periods in contact with abrasive materials.

The chain ordinarily is furnished in 10-foot sections coupled together by means of threaded bolts of manganese steel. Size of rollers, spacing between them and other dimensions can be made to suit individual specifications.

◆

## Switch for Hoists Allows One-Man Operation

General Electric Co., Schenectady, N. Y., announces a new pendant-type push-button for controlling small floor operated cranes. This device is shown in actual shop use in the accompanying illustration.

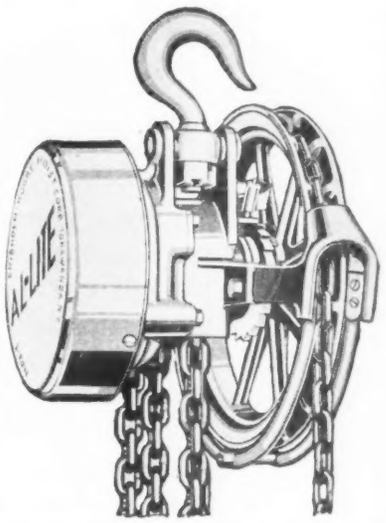
The pushbutton station is 20¼ inches long, 2⅜ inches wide and 2 9/16 inches deep, which makes it convenient to grasp and operate with one hand while the other is free to guide the load. The box is of cast aluminum.

The maker points out that this device is designed to supersede common rope or chain operated controls, with the advantage of greater safety to the operator, saving in time through easy one-man operation, and ability to make the hoist useful in minimum aisle space.

◆

## Aluminum Alloy Hoist Is Light and Strong

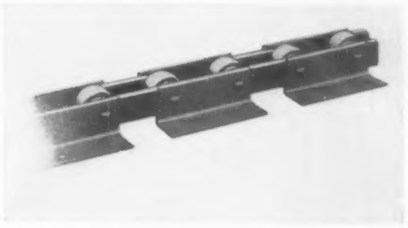
Chisholm-Moore Hoist Corp., Tonawanda, N. Y., announces a chain hoist made of aluminum alloy. This




*Use of aluminum alloy is feature of Chisholm-Moore hoist*

hoist, shown in the accompanying illustration, is said to be one third lighter than the ordinary model and at the same time to possess unusual strength and rigidity. It is pointed out that the lightness and efficiency is due to simplified design as well as to the lightness and strength of the material used in its construction.

The design is such as to insure ruggedness and at the same time to give accessibility to all working parts. Planetary gears are inclosed in a dustproof housing and shafts run on high-grade ball bearings. Pressure-gun grease lubrication is provided. The brake is easily adjustable and positive in action. Complete hoist, with chain must pass a 50 per cent overload test. The fact that one man can carry it and hang it in place without undue effort indicates one advantage of its light weight. The hoists have natural polished finish, their material making them corrosion resistant.



*Bucket conveyor chain developed by Manganese Steel Forge Co.*

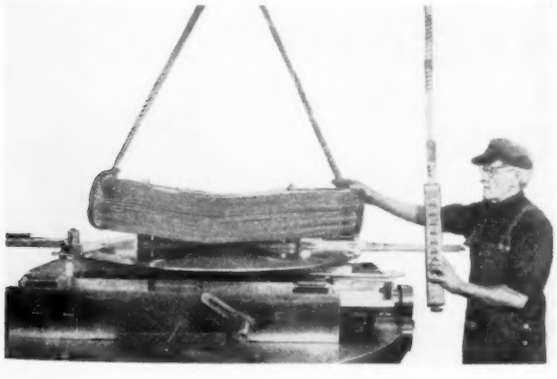
◆

## Variable-Speed Units Are Completely Enclosed

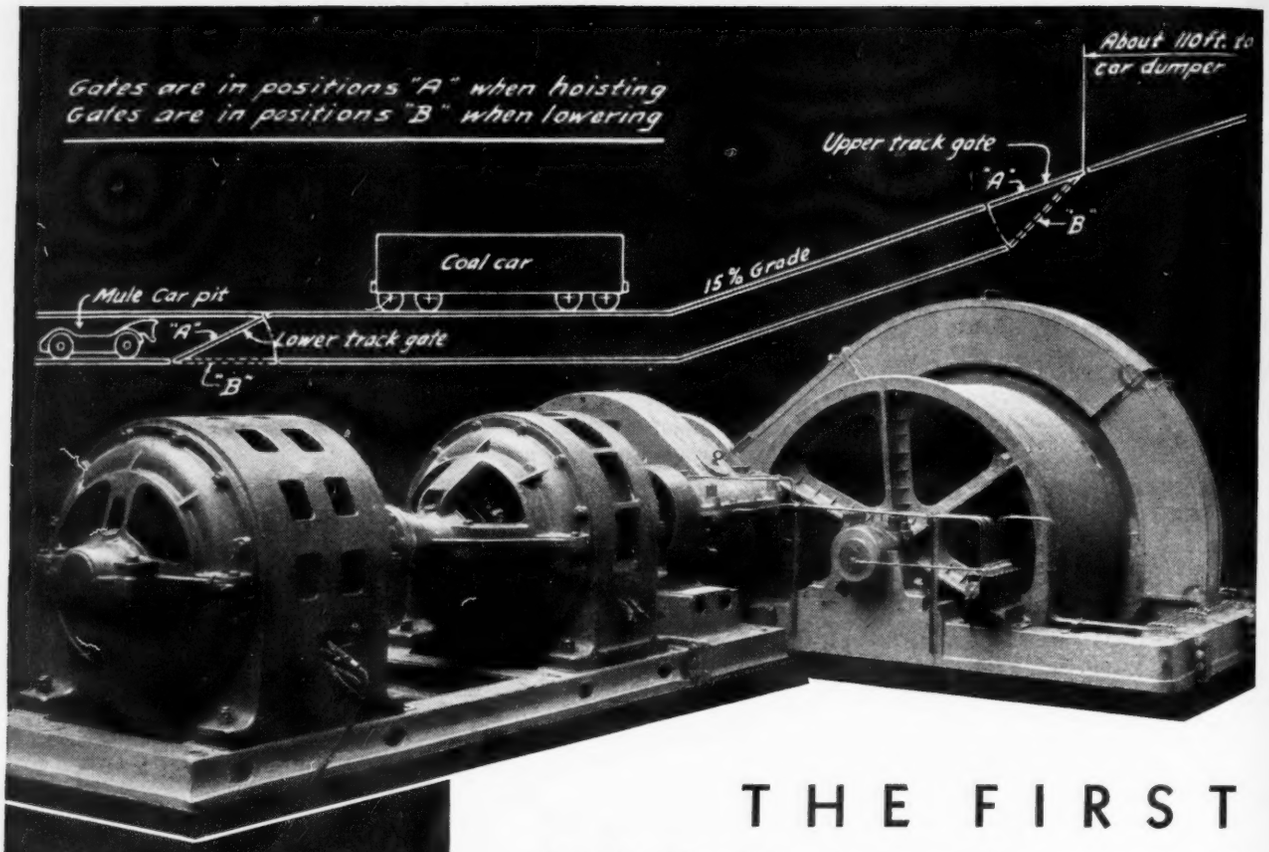
Reeves Pulley Co., Columbus, Ind., has developed a line of enclosed models of its variable-speed V-belt transmission. The accompanying illustration shows one of these complete with casing.

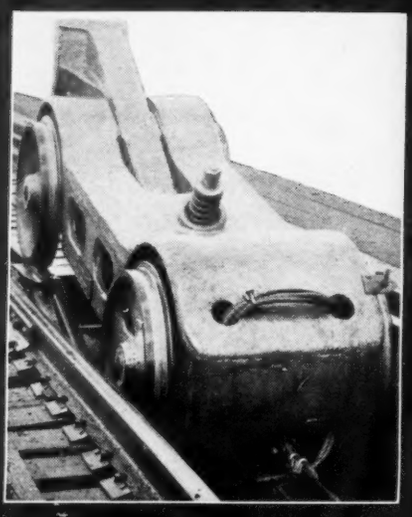
In this new unit a standard transmission is totally enclosed in a compact and symmetrical cast-iron case designed to merge neatly into the design of any equipment to which it may be applied, and at the same time to afford complete protection to operating parts against water, live steam, chemical fumes, abrasives, etc. Easy access to internal parts is provided by U-shaped recesses in the sides of the bottom section of the case. These permit the removal, as a unit, of the assembly comprising the bearings of the two shafts, shifting screws and belt tightening screws. By removing the lid of the case, inspection and minor adjustments can be made and belt installation is effected.

A feature of the new design is the centralized pressure-grease lubrication system which includes all bear-



*General Electric pendant switch speeds up handling of material with floor type cranes, and at the same time makes it a one-man operation*



# THE FIRST

## Mule Car Haulage to be operated entirely by alternating current

To overcome the problems due to the absence of direct current—this unique application of alternating current has just been made with a Wellman mule haulage for the Koppers Construction Company for operating on a 15% grade, placing railroad cars, having a maximum capacity of 320,000 pounds loaded weight, on the cradle of a revolving car dumper, at the rate of 20 cars per hour.

This is but one of many notable achievements of Wellman engineers in the solution of material handling problems—from mine to finished product.

WELLMAN

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New York at 30 Church St., Birmingham at 1101 Webb Crawford Bldg.
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"Canadian Wellman-Seaver-Morgan Co. Limited," 307 Reford Bldg., Toronto—821 Castle Bldg., Montreal
Mexico City at Edificio Oliver, 16 De Septiembre No. 5.

Formerly THE WELLMAN-SEAVER-MORGAN CO.

ings. Eight force-feed fittings are located in two recessed panels at one end of the case, and from these rigid copper tubes lead to the four radial shaft bearings, while flexible copper tubes lead to the four thrust bearings of the disk hubs of the adjustable pitch sheaves. By means of openings from the thrust bearings, lubricant also is forced into spiral grooves in the disk hub bores, thereby thoroughly lubricating disk hubs, shafts and driving keys. The units are shipped with all bearings and tubes thoroughly packed with lubricant, and when in use lubricating attention is necessary only once in 30 to 45 days, depending upon the service.

**Various Conditions Met**

The transmissions are built in six sizes, to cover requirements from fractional horsepower up to 10 horsepower in all ordinary speed ranges. They can be mounted on the floor, on the ceiling or in vertical position, as conditions demand. The covers will accommodate adjustable motor rails and cross rails, on which a complete motor unit or auxiliary countershaft unit can be mounted to handle various requirements of machine speed control.

◆

## Power Lift Trucks Have Telescoping Elevators

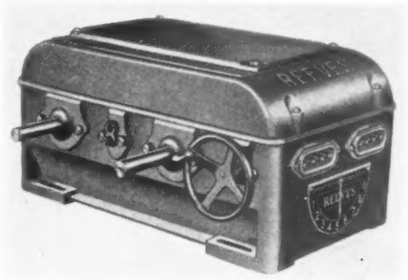
The Elwell-Parker Electric Co., 4205 St. Clair avenue, Cleveland, has developed a new line of three and four wheeled electrically driven and gas-electrically driven tiering trucks with telescoping uprights, which not only will give effective performance in the ordinary handling of unit load skids, but also will tier, rapidly to a height of 10 feet in the open. The accompanying illustration shows one of these trucks with its loaded tiering mechanism extended.

The truck which is illustrated is 38 inches in width, 100 inches in length, and has a 26 x 54-inch platform. This machine will pick up a 4000-pound load at 7½ inches above the floor in a railroad car of 3-inches high and will stack such a car to the roof, as its platform elevates to 61 inches before its secondary uprights begin to rise. It can be driven through a door 7 feet high and 42 inches wide.

This truck steers on all four rubber tired wheels and will operate in 70-inch aisles. Independent control of brake and power for ramp performance is provided. Travel, hoisting, tilting and auxiliary loading and unloading attachments are driven by fuseless motors. All functions are protected by standard automatic safety devices.

The complete line comprises machines of 3000, 4000 and 6000 pounds capacity, the smaller machine having three wheels while the larger sizes have four wheels. Platforms either 7 or 11 inches in height can be supplied.

*Telescoping uprights give high lift to Elwell-Parker tiering trucks*



*Enclosed model Reeves variable transmission has pressure lubrication*

◆

## Alloy Wire Rope Resists Heat and Corrosion

Hazard Wire Rope Co., Wilkes-Barre, Pa., has developed a chrome nickel alloy wire rope of good flexibility and high tensile strength, which resists destructive influences of corrosive fumes or direct contact with various acids, alkalis, salts and high-temperatures.

The accompanying illustration shows the helical shape to which the strands and individual wires of this rope are preformed. This enables it to be cut without first seizing the ends in addition to giving the rope maximum flexibility and longer life by eliminating internal stress and fatigue. The maker claims that this rope can be operated with safety under temperatures up to 1650 degrees Fahr.

*Chrome nickel alloy cable developed by Hazard Wire Rope Co.*

◆

## Truck Wheels Are Made with Wood Block Treads

Metzgar Co. Inc., Grand Rapids, Mich., has developed a new type of wheel for various standard types of industrial trucks. These wheels have cores of specially treated maple blocks bound together by steel flanges and rings which are riveted through the wood. The treads are formed by the end grain of these blocks, and are said to be long-wearing as well as subjecting floors to a minimum degree of wear.

◆

## Improved Car Pullers Have Electric Drives

Webster & Weller Mfg. Co., 1856 North Kostner avenue, Chicago, announces a line of improved car pullers of the capstan type, one of which is shown in action in the accompanying illustration. The pullers are self-contained units with electric drives, and are cased in so as to be absolutely weatherproof. They are designed to pull trucks, cars, etc. at any angle. Three standard sizes are available, designed to handle loads from 1 to 60 tons.

*Electrically driven car puller built by Webster & Weller Mfg. Co.*

## Beams From Broadway

(*Concluded from Page* 33)

mitted. Instead of paying the city for the material, the only bidder asked $18,000 to raze the structure and haul it away.

Perry Buxton Doane Co. made the only offer. The city, expecting something for structural steel, rejected the bid, but it is now revising specifications for the removal of the same. The lone bidder, going over the job, found that wrecking costs would be prohibitive—that if the city gave away the steel as scrap, the dealer would lose money in view of difficult wrecking provisions. Liabilities, including insurance, highway maintenance and problems involved in razing the structure would eliminate any profit scrap dealers might hope for in cutting up the material and hauling it away. At least, the only bidder for the work took that view.

These facts are interesting in view of the circumstances that call for the wrecking of the Sixth avenue elevated line, construction of the subway under that route due to start within the next few months. The value of the steel in this structure, thousands of tons, in the minds of the city fathers, may take a new figure as a result of the bids on the Thirty-fourth street spur.

## GothamLampPosts Consume Much Steel and Iron

It takes close to 20,000 tons of steel pipe and cast iron in lamp posts alone to get Broadway and New York "lit-up" each night. More than 6000 tons of steel pipe, 3½-inch and 4-inch extra heavy, are used in these metal posts, covering five boroughs.

There are approximately 43,800 of them. The department of water supply, gas and electricity has 22,000 while about 21,800 were installed by utility interests. There are several types. The standard post bought by the city has a mastarm at right angles to the upright. Others have goosenecks to which the light is attached. A third type carries the light directly atop the post.

The standard lamp post installed by the city weighs slightly more than 700 pounds and consists of several cast iron parts. The pedestal weighs 250 pounds, the column casting 200 and other parts, including the sleeve, mastarm with a small malleable iron casting and scroll work near the light, between 50 and 60 pounds.

Running upward through the post, from ground to mastarm, is an extra heavy 3½-inch steel pipe. Two wires run through the steel pipe for one light. The steel pipe in a standard department post weighs about 225 pounds and is 18 feet long. Utility owned posts are somewhat heavier and 4-inch steel pipe is used in them.

Most lamp post installations are for lighting service extensions and replacements run about 250 annually. The auto takes the greatest toll, but not as many since the extended mastarm was adopted, placing the pedestal farther back from the edge of the roadway. Few of the standard city poles are used on Broadway, lower Brooklyn and Manhattan, being installed largely in the residential streets of the five boroughs.

Several thousand steel and cast iron posts are purchased annually by both the city and utilities. The ability of some of these posts to halt wandering and wildly driven automobiles is often amazing. The casting is generally smashed at the base and several other points, but the steel pipe inside, while badly bent, generally keeps the mastarm and light from falling unless a big truck has been in the battle.

## Building Below Tide Level Possible by Steel Piling

Time and tide wait for no man—often tide is more uncertain than time. Driving down to bedrock, 35 feet below street level, a few hundred feet from the East river, Old Slip and South street, the Pierce Steel Pile Co. has under way one of the most difficult foundation jobs—the United States assay office. The foundation is well below low tide level, the site of the structure being entirely on "made" land. Years ago the plot was well under the East river.

About 3000 tons of sheets and steel pipe piling are being driven to bedrock, while pumps are working day and night to keep the job clear of water. When the tide rises, the pumps are working overtime. Steel sheet piling is used for the section which will include the vaults. Close to 15,000 square feet of sheet piling have been driven to support the outside wall, the vaults being under water, a few hundred feet away.

York Safe & Lock Co. has contracted with the Great Lakes Construction Co., general contractors, to move present equipment from Wall street and install it in sub-basement of the new structure.

◆

The new Waldorf-Astoria will "manufacture its own weather," having a special cooling and dehumidifying apparatus to keep the air in public rooms at an even temperature and degree of humidity both summer and winter. More than 1,000,000 feet of strand wire will be used in the radio system, taking programs from a central amplifier to each room. . . . Concealed copper radiators are specified for house equipment in the new 17-story apartment under construction at Madison avenue and Eighty-sixth street, T. E. Rhoades Co. Inc. being the builder. . . . London terrace, the Henry Mandel development in the old Chelsea district, now practically completed, has many innovations including a court garden for which 2500 cubic yards of top-soil were transported from Long Island. . . . Pennsylvania railroad is completing 1500 gondola cars designed especially for transportation of structural shapes, bars, pipe and other lengthy steel materials, carrying a limit load of 148,000 pounds. . . . The Maritime Exchange building, completed on the site of the famous coffee house, Broad street, now flies from the yardarm of its main mast, 15 signal flags daily, that spell to those familiar with ship signals, a slogan in connection with advertising of the building. . . . New York City is served by 9,400,000 miles of telephone wire, 495,000 miles of which was installed in 1930 and 98 per cent of all telephone wire mileage is now enclosed in storm-proof cable. . . . Irving Trust Co. building, 1 Wall street, 50 stories high, has been awarded the architectural honors by the Broadway association. The architects are Voorhees, Gmelin & Walker, while Marc Eidlitz & Sons were the builders. Chrome-nickel steel is used as an interior trim in this building.

# Personals

(*Continued from Page* 30)

Mich., mine. For many years he was assistant superintendent at that point. He then was transferred to the Mesabi range, where at one time he had charge of all the company's operations. At the formation of the McKinney Steel Co. he was given supervision of all iron mining operations, with headquarters at Virginia, Minn., but later he was transferred to Bessemer, where he has been located for many years.

□ □ □

T. A. Russell, acting president of Massey Harris Co. Ltd., Toronto, Ont., since last November, has been formally elected president.

B. W. Burtsell has been appointed general manager, and is to become a director and vice president. Mr. Burtsell served his apprenticeship with Brown & Sharpe Mfg. Co., Providence, R. I., and later became superintendent of Packard Motor Car Co., Detroit. He was more recently president and general manager of the McKinnon Columbus Chain Ltd., St. Catharines, Ont., prior to its absorption by General Motors Corp.

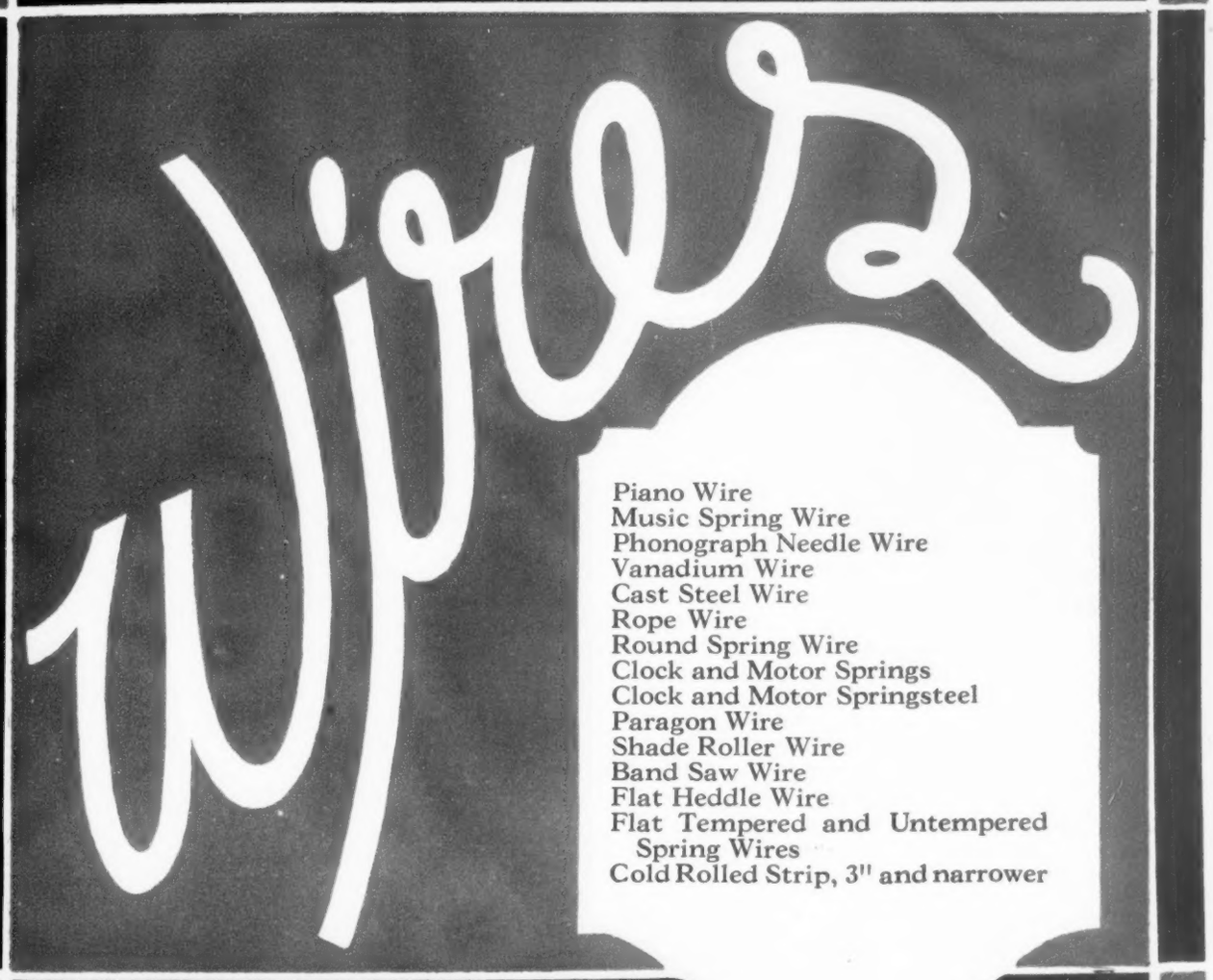
□ □ □

Blaine Zuver, chairman of the Enterprise Aluminum Co., Massillon, O., was elected a director of the Reliance Mfg. Co., Cleveland, at the recent annual meeting in Massillon.

□ □ □

John L. Osgood, president of

# HIGH CARBON ROUND & FLAT




**Washburn Wire Co., Inc.**

**118th St. and Harlem River, New York, N.Y.**

John L. Osgood Machinery & Tool Co., Buffalo, is home after a four-month tour of South America.

□ □ □

Frank N. Ames, of Corry, Pa., recently chairman of Aero Supply Mfg. Co., has been elected president to succeed George I. Stich, who resigned.

□ □ □

R. H. Cherry, recently appointed sales manager of the wire rope department of the Wickwire Spencer Steel Co., as noted in STEEL of March 19, has long been identified with the industry. For many years he was directly associated with the sale of wire rope and magnet wire in the eastern sales division of the American Steel & Wire Co., finally being placed in charge of wire rope sales for the company in its entire eastern territory, from New York state south

*Photo by Blank-Stoller Inc.*
**R. H. Cherry**

to Florida and east of the Mississippi river. He was born at East Orange, N. J., Aug. 27, 1892.

□ □ □

William L. Brown, 1600 Arch street, Philadelphia, has been appointed special representative in Philadelphia and southern territory for Logan Iron & Steel Co., Burnham, Pa., manufacturer of staybolt, engine bolt and other wrought iron bars.

□ □ □

John F. Blackie, for six years manager of manufacturing activities of National Enameling & Stamping Co., St. Louis, now is executive vice president, a newly-created position. He will divide his time between the Milwaukee, Granite City, Ill., and other works of the company.

□ □ □

Rene von Schleinitz, formerly secretary-treasurer and now a director of Harnischfeger Corp., Milwaukee, has returned to that city after spending almost a year in foreign countries.

□ □ □

J. R. Worsfold, who continues in charge of mechanical specialties department of the Wickwire Spencer Steel Co., as noted in STEEL of March 19, in 1907, became director of

*Photo by Blank-Stoller Inc.*
**J. R. Worsfold**

purchases for the Marquette Cement Mfg. Co., La Salle, Ill. Later he was made purchasing agent for the International Salt Co., Chicago, and in 1913 research engineer and manager of the perforating department of the Clinton Wire Cloth Co., then at Clinton, Mass. With the amalgamation of the Clinton Wire Cloth and the Wright Wire companies in 1919 he became sales manager of the perforating division. A year later he withdrew from this field to become vice president of the George H. Adams Co., Franklin, N. H., manufacturer of knitting machine latch needles. In 1924 he became sales manager of the department handling perforated metals, grilles, spirals and aprons, and card clothing of the then reorganized Wickwire Spencer Steel Co. Mr. Worsfold was born at Red Hill, Suerry county, England.

□ □ □

K. W. Jappe, recently elected vice president of Brookmire Economic Service Inc., New York, for 18 years was engaged in installing improved operating and control methods in steel, hardware and other industries as well as public utilities. He became identified with Brookmire Economic Service in 1927 and has had charge of its commercial consulting service.

□ □ □

Walter W. Bertram has been appointed sales manager of the industrial chain division of Morse Chain Co., Ithaca, N. Y. He has been with the company for 18 years, during the past eight of which he has been manager of the company's New York office.

A. B. Wray, former sales manager, is now chief engineer in charge of all industrial chain engineering.

□ □ □

L. M. Dunning has been promoted to be sales representative in the Chicago office of Reliance Electric & Engineering Co., Cleveland.

Herbert A. Holmes has been advanced to sales representative in the Pittsburgh office.

□ □ □

A. G. Bussman's recent appointment as sales manager of the wire and springs department of Wickwire Spencer Steel Co., New York, as noted in STEEL of March 18, follows a number of years of practical experience in wire research and sales promotional work. Graduating from Carnegie Institute of Technology in

*Photo by Blank-Stoller Inc.*
**A. G. Bussman**

1909, for two years, he was chemist in the laboratory of the Carnegie Steel Co., Pittsburgh. Later he was appointed assistant chemist of the New York Public Service commission, New York. Two years later he became chief chemist at the Donora, Pa., works of the American Steel & Wire Co., serving for 14 years. Subsequently he became welding engineer of that company, with headquarters in New York. He then became president of the Standard Steel & Wire Co., Greensburg, Pa.

□ □ □

Frank C. Reed, general sales manager of the Westinghouse Electric Elevator Co., Pittsburgh, has been elected vice president to succeed R. I. Phillips. He formerly was connected with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., joining the elevator branch in 1921. He has been with Westinghouse interests for the past 28 years. Since 1927 his headquarters had been at Chicago.

# Markets Waver as Quarter Opens

## Operations Are Slower, but Trend Is Not Clear—Pennsylvania Railroad Places 100,900 Tons; Week's Shape Awards 143,904 Tons—New Steel Prices Are Untested

OUTSTANDING in a puzzling cross-current of indicators of the iron and steel markets is the fact that for the second consecutive week steelmaking operations have declined. The decrease this week, like last week, is one point, leaving the industry at approximately 55 per cent.

Whether this slight easiness in production is merely a breathing spell or whether it marks a definite relapse from the upturn which was unbroken from the holidays to the week beginning March 23 is as yet an unsafe generalization. A two point loss in two weeks is not great, but it is being searched for a trend.

It is evident, however, that the markets lack the broad, sustaining base which many believed the successive improvement of January, February and March was building up to. There are many elements of strength, and yet the irregularities in price and sluggish contracting for the second quarter indicate a drifting, uncertain situation at the moment.

Certainly there is no lack of confidence among promoters of large projects. The Pennsylvania has let the 100,900 tons of steel for its improvement program; the New York Central is proceeding with a warehouse at New York requiring 65,000 tons; the Marshall Field estate at Chicago is taking bids on 25,000 tons; the 12,000 tons for the East Boston traffic tunnel have been awarded.

Presumably, moderate and small-size consumers of steel would be equally willing to cover if they had definite requirements. But with purchases of railroad equipment negligible, the automobile industry as a whole—despite marked activity by Ford and Chevrolet—finding it difficult to attain a faster gait, and farm implement production extremely slack, there is no incentive to cover.

Final statistics for March undoubtedly will disclose gains in the production both of pig iron and steel ingots. The booking of 125,000 tons for the Metropolitan Square-Radio City project in New York will mitigate any loss in Steel corporation unfilled tonnage as of March 31. A fair record has been written for the first quarter, but as the second quarter opens the outlook is obscure. Since seven of the last ten Aprils have developed declines in production, any easiness now indicated would not be unseasonal.

The Pennsylvania railroad distributed 100,900 tons of steel, chiefly structural material, as follows: McClintic-Marshall Corp., subsidiary of Bethlehem Steel Corp., 34,000 tons; American Bridge Co., subsidiary of United States Steel Corp., 26,000 tons; Shoemaker Bridge Co., 14,000 tons; Ingalls Iron Works Co., 13,000 tons; Mt. Vernon Bridge Co., 4300 tons; Lehigh Structural Steel Co. and Fort Pitt Bridge Works, each 4000 tons; and Phoenix Bridge Co., 1600 tons. This week's structural awards, at 143,904 tons, were second only to the 146,484 tons placed two weeks ago when the Radio City steel in New York was let.

March freight car orders were boosted to 2249 with the award of 1000 refrigerator cars by the Merchants Despatch line to its own shops. In three months of 1931 freight car awards have totaled 2399; a year ago 28,217.

Rarely has the price structure been so inconclusive. On steel bars, plates and shapes measurable progress has been made in applying 1.65c, Pittsburgh, or equivalent to second quarter contracts. In some cases 1.60c arrangements have been extended, but in the main consumers have consented to the $1 advance. The 1.70c spot price for the second quarter is, of course, yet untested.

Black, galvanized and autobody sheets continue irregular and tend toward weakness. In strip the attempt to advance the price has failed. Carryover business in wire products bears heavily on the higher asking prices. Railroad spikes are off $2 per ton. Scrap is variable, with weakness preponderant. Cast iron pipe has been shaded. Iron ore levels have definitely been reaffirmed on the Ford inquiry.

Softness in sheet prices lowers STEEL's market composite 4 cents this week to $31.67, compared with an average of $31.66 for March and $31.65 for February.

### Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

| | |
|---|---|
| **This week (April 1, 1931)** | **$31.67** |
| **Last week (March 25, 1931)** | **31.71** |
| **One month ago (March, 1931)** | **31.66** |
| **Three months ago (January, 1931)** | **31.71** |
| **One year ago (April, 1930)** | **34.44** |
| **Ten years ago (April, 1921)** | **43.84** |

# Comparative Prices of Iron, Steel and Coke

**Representative Market Figures for This Week, Last Month, Three Months and One Year Ago**

| | April 1, 1931 | March 1931 | Jan. 1931 | April 1930 |
|---|---|---|---|---|
| **PIG IRON** | | | | |
| Bessemer, del. Pittsburgh | $18.26 | 18.26 | 18.76 | 20.76 |
| Basic, valley | 17.00 | 16.75 | 17.00 | 18.50 |
| Basic, eastern del. eastern Pa. | 17.50 | 17.25 | 17.25 | 18.76 |
| No. 2 foundry, del. Pittsburgh | 18.26 | 18.01 | 18.26 | 19.76 |
| No. 2 foundry, Chicago | 17.50 | 17.50 | 17.50 | 19.40 |
| *Southern No. 2, Birmingham | 13.00 | 13.00 | 14.00 | 14.00 |
| **No. 2X, Virginia furnace | 18.25 | 18.25 | 18.25 | 18.25 |
| **No. 2X, Eastern del., Phila. | 18.26 | 18.26 | 18.26 | 20.76 |
| Malleable, valley | 17.00 | 17.00 | 17.50 | 19.00 |
| Malleable, Chicago | 17.50 | 17.50 | 17.50 | 19.40 |
| Lake Superior, charcoal, del. Chi. | 27.04 | 27.04 | 27.04 | 27.04 |
| Gray forge, del. Pittsburgh | 17.63 | 17.38 | 17.63 | 19.13 |
| Ferromanganese, del. Pittsburgh | 89.79 | 89.79 | 89.79 | 103.79 |

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $11, Birmingham. **2.25 to 2.75 silicon.

| | | | | |
|---|---|---|---|---|
| **COKE** | | | | |
| Connellsville furnace, ovens | 2.50 | 2.50 | 2.50 | 2.60 |
| Connellsville foundry, ovens | 3.25 | 3.25 | 3.30 | 3.50 |
| **SEMIFINISHED MATERIAL** | | | | |
| Sheet bars, open-hearth, Youngs. | 30.00 | 30.00 | 30.00 | 33.00 |
| Sheet bars, open-hearth, Pitts. | 30.00 | 30.00 | 30.00 | 33.00 |
| Billets, open-hearth, Pittsburgh | 30.00 | 30.00 | 30.00 | 33.00 |
| Wire rods, Pittsburgh | 37.00 | 36.00 | 35.00 | 38.00 |

| | April 1, 1931 | March 1931 | Jan. 1931 | April 1930 |
|---|---|---|---|---|
| **FINISHED MATERIAL** | | | | |
| Steel bars, Pittsburgh | 1.65 | 1.65 | 1.65 | 1.80 |
| Steel bars, Chicago | 1.80 | 1.60 | 1.60 | 1.85 |
| Steel bars, Philadelphia | 1.94 | 1.94 | 1.94 | 2.12 |
| Iron bars, Chicago | 1.75 | 1.70 | 1.70 | 1.95 |
| Shapes, Pittsburgh | 1.65 | 1.60 | 1.60 | 1.80 |
| Shapes, Philadelphia | 1.81 | 1.81 | 1.81 | 1.81 |
| Shapes, Chicago | 1.80 | 1.70 | 1.70 | 1.90 |
| Tank plates, Pittsburgh | 1.65 | 1.65 | 1.65 | 1.80 |
| Tank plates, Philadelphia | 1.80½ | 1.80½ | 1.80½ | 1.95 |
| Tank plates, Chicago | 1.80 | 1.70 | 1.70 | 1.90 |
| Sheets, blue anl., No. 13, Pitts. | 2.05 | 2.05 | 2.05 | 2.25 |
| Sheets, black, No. 24, Pitts. | 2.25 | 2.35 | 2.35 | 2.65 |
| Sheets, gal., No. 24, Pittsburgh | 2.90 | 2.90 | 2.90 | 3.30 |
| Sheets, black, No. 24, Chicago | 2.50 | 2.50 | 2.50 | 2.89 |
| Sheets, blue anl., No. 13, Chicago | 2.20 | 2.20 | 2.20 | 2.40 |
| Sheets, galvanized, No. 24, Chi. | 3.05 | 3.05 | 3.05 | 3.45 |
| Plain wire, Pittsburgh | 2.20 | 2.20 | 2.20 | 2.40 |
| Wire nails, Pittsburgh | 1.90 | 1.90 | 1.90 | 2.25 |
| Tin plate, per base box, Pitts. | 5.00 | 5.00 | 5.00 | 5.25 |
| **SCRAP** | | | | |
| Heavy melting steel, Pitts. | 13.00 | 12.90 | 13.00 | 16.05 |
| Heavy melting steel, eastern Pa. | 10.50 | 10.50 | 10.50 | 13.95 |
| Heavy melting steel, Chicago | 9.75 | 9.75 | 10.00 | 13.00 |
| No. 1 wrought, eastern Pa. | 11.00 | 11.00 | 13.25 | 15.75 |
| No. 1 wrought, Chicago | 9.00 | 9.00 | 9.50 | 13.30 |
| Rails for rolling, Chicago | 12.00 | 12.00 | 13.00 | 15.00 |

# Sheets

**Contracting for Second Quarter Improves Moderately — Prices Irregular and Slightly Easier**

PIPE PRICES, PAGE 103

**Youngstown, O.**—Confusion in the sheet market, first apparent last week, is not being clarified this week by the falling off in the volume of specifications. This recession is extending to all grades, including automotive. Operating rates are correspondingly lower. At Niles, O., the Republic Steel Corp. has eight units active out of 18, while all other sheet plants at that center are idle this week. Thus only eight units at Niles are active out of a total of 54. Other important autobody sheet makers are 45 per cent active this week. A recent development in the autobody market is the disposition of buyers to purchase as "automobile sheets" certain pickled sheets for popular price automobiles where high-finish body stock is not so imperative. Hence the price of standard autobody sheets, 3.30c, Pittsburgh, formerly prevailing, has been driven down to 3.20c. Another development is an alleged offer by certain eastern Ohio sheet mills to sell common black at 2.25c, Youngstown mill base, this to meet outside competition. This price is equivalent to 2.30c, Pittsburgh. It appears that to offset this outside competition, which carries a freight arbitrary of $1 a ton, no matter where the maker is located, the lower price is quoted in certain instances.

**New York**—While the 2.35c, Pittsburgh, base has been shaded $2 a ton, on certain orders where special extras were involved, the bulk of current business in black sheets is going at 2.35c in this district. Galvanized sheets are 2.90c, Pittsburgh, to the general trade, with $1 a ton off to certain jobbers.

**Philadelphia**—The sheet market is sluggish. Galvanized are 2.85c to 2.90c, Pittsburgh. Black are 2.35c, subject to occasional shading of $2 a ton in the base price where extra finished are wanted. Blue annealed are firm at 1.90c and 2.05c.

**Pittsburgh**—Sheet demand generally is quiet and unchanged. Second quarter contracting is more active although most customers show little interest in making new commitments and producers are not soliciting contracts. Specifications and new business hold at the quiet rate of recent weeks with the exception of demand for culvert sheets for roadbuilding. Automotive demand continues light and requirements of most other consumers are limited to small lots. Prices lack strength on several grades, with 2.25c, Pittsburgh, becoming more prominent on black sheets, compared with 2.35c recently. Galvanized usually are quoted 2.90c, although shading is noted in some districts. The sheet and jobbing mill blue annealed product is steady at 2.05c for No. 13 gage and 1.90c for Nos. 9 and 10 gage, with some lower prices going on the continuous mill product. Autobody sheets usually are 3.20c.

**Cleveland**—Prices of black, metal furniture and autobody sheets have been marked down $2 a ton. Black now are 2.25c, and with the 1.25c extra for metal furniture grade this automatically becomes 3.50c, both Pittsburgh base. Autobody sheets have settled more definitely to 3.20c, Pittsburgh. The Fisher Body Co. issued releases March 28 for stock for April and early May. Galvanized are more generally 2.85c to 2.90c, Pittsburgh, but Nos. 9 and 10 blue annealed continue 1.90c, and No. 13, 2.05c, Pittsburgh. Sales are light.

**Chicago**—Producers still obtain 3.00c, Chicago district mills, for No. 24 galvanized in competitive territory. Shading to the extent of $1 is noted in the Southwest roofing market, but autobody sheets have less influence in this market than in the East. Mills are scheduling 70 per cent operations for the full week. Sales offices noted a heavy order mail early this week, but no backlogs and virtually no new quarterly contracting.

# Current Finished Steel Prices

**Prices in cents per pound unless otherwise stated**

## Steel Sheets

**SHEET MILL BLACK, NO. 24**

| | |
|---|---|
| Pittsburgh, base | 2.25c to 2.35c |
| Philadelphia, delivered | 2.64c |
| Gary, Indiana Harbor | 2.45c |
| Chicago, delivered | 2.50c |
| Birmingham, base | 2.50c |
| St. Louis, del. | 2.70½c |

**TIN MILL BLACK, NO. 28**

| | |
|---|---|
| Pittsburgh, base | 2.55c to 2.65c |
| Gary, base | 2.65c to 2.75c |

**GALVANIZED NO. 24**

| | |
|---|---|
| Pittsburgh, base | 2.85c to 2.90c |
| Philadelphia, delivered | 3.19c |
| Chicago, delivered | 3.05c |
| Gary, Indiana Harbor | 3.00c |
| Birmingham, base | 3.05c |
| St. Louis, del. | 3.25½c |

**BLUE ANNEALED SHEETS NO. 13**

| | |
|---|---|
| Pittsburgh, base | 2.05c |
| Chicago, district mills | 2.15c |
| Chicago, delivered | 2.20c |
| St. Louis, delivered | 2.40½c |
| Philadelphia, delivered | 2.34c |
| Birmingham | 2.20c |

**BLUE ANNEALED SHEETS NO. 9-10**

| | |
|---|---|
| Pittsburgh, base | 1.90c |
| Chicago, district mills | 2.00c |
| Chicago, delivered | 2.05c |
| Philadelphia, delivered | 2.19c |
| St. Louis, delivered | 2.25½c |
| Birmingham | 2.05c to 2.10c |

**AUTOMOBILE NO. 20**

| | |
|---|---|
| Pittsburgh, base | 3.20c |

**FURNITURE NO. 24**

| | |
|---|---|
| Pittsburgh, patent leveled | 3.50c |

## Tin and Terne Plate

**Prices per 100 pound box Pittsburgh**

| | |
|---|---|
| Tin plate, coke base | $5.00 |

Gary, Ind., base 10 cents higher.

(Per pound)

| | |
|---|---|
| Long ternes, 24, unassorted | 3.25c to 3.35c |

## Wire Products

**(To Jobbers-Merchant Trade)**

F.o.b. Pittsburgh, Cleveland base

(Per 100 pound keg)

| | |
|---|---|
| Standard wire nails | $1.90 and 2.00 |
| Cement coated nails | 1.90 and 2.00 |
| Galvanized nails | 3.90 and 4.00 |

(Per pound)

| | |
|---|---|
| Polished staples | 2.35c and 2.45c |
| Galvanized staples | 2.60c and 2.70c |
| Barbed wire, gal. | 2.55c and 2.65c |
| Annealed fence wire | 2.35c and 2.45c |
| Galvanized wire | 2.80c and 2.90c |

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

**(To Manufacturing Trade)**

| | |
|---|---|
| Plain wire, 6-9 gage | 2.20c to 2.30c |
| Spring wire | 3.20c to 3.30c |
| Wire, delivered Detroit | 2.50c |
| Nails, delivered Detroit | $2.35 |

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

(Second-quarter asking prices $2 per ton above those levels, except fencing.)

## Rivets

| | |
|---|---|
| Struc. c.l., Pitts.-Cleve. | 2.75c |
| Struc., c.l., Chicago | 2.85c |
| **7/16-in., smaller, Pitts. | 70, 10 and 5 off |
| Chi., Cleve. | 70 to 70, 10 and 5 off |

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

## Steel Plates

| | |
|---|---|
| Base, Pittsburgh | 1.65c to 1.70c |
| Philadelphia, del. | 1.85½c to 1.90½c |
| New York, delivered | 1.93c to 1.98c |
| Boston, delivered | 2.05c to 2.10c |
| Chicago, base | 1.70c to 1.80c |
| Cleveland, delivered | 1.83½c to 1.88½c |
| Lackawanna, N. Y., base | 1.75c to 1.80c |
| Birmingham, base | 1.80c to 1.85c |
| Coatesville, Pa., base | 1.70c to 1.75c |
| Pacific Coast, c.i.f. | 2.05c to 2.15c |
| St Louis, del | 1.95½c |

## Structural Shapes

| | |
|---|---|
| Base, Pittsburgh | 1.65c to 1.70c |
| Philadelphia, del. | 1.81c to 1.86c |
| New York, del. | 1.90½c to 1.95½c |
| Boston, del. | 2.03½c to 2.08½c |
| Chicago, base | 1.70c to 1.80c |
| Cleveland, delivered | 1.83½c to 1.88½c |
| Lackawanna, N. Y., base | 1.75c to 1.80c |
| Birmingham base | 1.80c to 1.85c |
| Pacific Coast, c.i.f. | 2.15c to 2.25c |

## Bars

**SOFT STEEL**

| | |
|---|---|
| Base, Pittsburgh | 1.65c to 1.70c |
| Chicago, base | 1.70c to 1.80c |
| Birmingham base | 1.80c to 1.85c |
| Lackawanna, N. Y., base | 1.70c to 1.75c |
| Pacific Coast, c.i.f. | 2.25c |
| Cleveland, base | 1.65c to 1.70c |
| Philadelphia, del. | 1.94c to 1.99c |
| New York, del. | 1.98c to 2.03½c |
| Boston, del. | 2.05c to 2.10c |
| Pittsburgh, cold finish | 1.80c to 1.85c |
| Pittsburgh, forg. qual. | 1.90c to 1.95c |

**RAIL STEEL**

| | |
|---|---|
| Chicago Heights | 1.60c to 1.65c |
| Eastern mills | 1.55c |

**IRON**

| | |
|---|---|
| Chicago, base | 1.75c to 1.80c |
| New York, delivered | 1.93c to 2.03c |
| Philadelphia, delivered | 1.89c |
| Pittsburgh, refined | 2.75c to 4.25c |

**REINFORCING**

| | |
|---|---|
| Pitts., billet cut lengths | 1.90c to 2.00c |
| Stock lengths, mill | 1.65c to 1.75c |
| Chi., billet | 1.85c to 2.00c |
| Chi., rail steel | 1.60c to 1.70c |
| Chi., rail steel, less carload | 1.90c |
| Philadelphia, cut lengths | 2.19c |
| Cleveland, cut lengths | 1.95c to 2.05c |

## Cold Finished Steel Bars and Shafting

| | |
|---|---|
| Base, Pittsburgh, Chicago, Buffalo and Cleveland | 2.10c |
| Shafting, turned and ground, mill | 2.45c to 2.90c |

## Corrosion, Heat Resist. Alloys

**Base, Pittsburgh**

18 per cent chrome, 8 per cent nickel

Sheets, 35c; plates, 31c; bars, 28c.

| | A | B | C | D |
|---|---|---|---|---|
| Bars | 19c | 20.5c | 23c | 28c |
| Plates | 21c | 22.5c | 25c | 30c |
| Sheets | 26c | 27.5c | 30c | 35c |
| Hot strip | 19c | 20.5c | 23c | 28c |
| Cold strip | 28c | 29.5c | 32c | 37c |

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

## Wrought Washers

| | |
|---|---|
| Carloads, Pitts. dist. | $6.50 to $6.75 off |
| Carloads, Chicago dist. | 6.70 to 6.80 off |

## Alloy Steel

**Hot Rolled—F.o.b. Mills**

Alloy Quality Bar Base is 2.65c

| S.A.E. | Alloy Diff. | S.A.E. | Alloy Diff. |
|---|---|---|---|
| 2000 | 0.25 | 1.25-1.75 Ni. | 1.05 |
| 2100 | 0.55 | 5100 .80 - 1.10 Cr. | 0.45 |
| 2300 | 1.50 | 51.00 Cr. spring | 0.20 |
| 2500 | 2.25 | 6100 bars | 1.20 |
| 3100 | 0.55 | 6100 Spring | 0.95 |
| 3200 | 1.35 | Cr., Ni., Van. | 1.50 |
| 3300 | 3.80 | Carbon Van. | 0.95 |
| 3400 | 3.20 | 9250 (flats) | 0.25 |
| 4100 .15 to .25 Mo. | 0.50 | 9250 (rds.,sq.) | 0.50 |
| 4600 .20 to .30 Mo. | | | |

## Strip, Hoops Bands

| | |
|---|---|
| Hot strip, to 6-in., Pitts. | 1.65c to 1.70c |
| Hot strip 6 1/16 to 24-in. Pitts. | 1.55c to 1.60c |
| Hot strip, bands 6 in. and under, Chicago | 1.75c to 1.80c |
| Do. 6 1/16 to 24 in. | 1.65c to 1.70c |
| Cooperage hoop, Pitts. | 1.90c to 2.00c |
| Do, Chicago | 2.00c to 2.10c |
| Cold rolled strip, Pitts., Cleve., 3 tons, over | 2.25c to 2.35c |
| Worcester, 3 tons, over | 2.40c to 2.50c |

## Rails, Track Material

| | |
|---|---|
| Standard bess. and open hearth rails, mill | $43.00 |
| Relay rails, Pitts., 60 to 90 lb. | $24.00 to 28.00 |
| Light rails, 25-45, mills | $34.00 |
| Light rails, Chicago | $36.00 |
| Angle bars, Chi. base | 2.75c |
| Spikes, railroad, mills | 2.70c |
| Spikes, railroad, 7/16-in. and smaller, Pitts. | 2.70c |
| Spikes boat, barge, Pitts. | 3.00c |
| Spikes, railroad, Chi. | 2.80c |
| Track bolts, Pitts., steam roads | 3.80c |
| Do. standard, jobbers | 73 off list |
| Track bolts, Chicago | 3.80c |
| Tie plate, mills | $39.00 |

## Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

**CARRIAGE BOLTS**

| | |
|---|---|
| All sizes, cut thread | 73 off |

Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.

| | |
|---|---|
| Eagle list | 73 off |

**MACHINE BOLTS**

| | |
|---|---|
| All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts | 73 off |

Tire bolts, 60, 10 and 10 off.

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

**NUTS**

| | |
|---|---|
| Semifinished | 73 off |

**HEXAGON CAP SCREWS**

| | |
|---|---|
| Milled | 80-10-10-5 off |
| Upset 1 in. diam. and smaller | 85-10 off |

**SQUARE HEAD SET SCREWS**

| | |
|---|---|
| Milled | 80-5 off |
| Upset 1 in. and smaller | 80-10-5 off |
| Upset, larger than 1 in. | 80-5 off |

## Cut Nails, Chain, Piling

| | |
|---|---|
| Cut nails, c.l., Pittsburgh | 2.40c |

do, less carloads, 5 kegs or over, 2.65c; and less than 5 kegs, 2.80c.

| | |
|---|---|
| Chain, BB, BBB, 9/16-1½ in. | 33 1/3 off |
| Sheet piling, Pitts. | 1.90c |

# Bars

**Effort to Establish Second Quarter Price Not Fully Tested—Specifications Heavier**

BAR PRICES, PAGE 81

**Chicago** — Mills put into effect April 1 the 1.80c, Chicago, price for bars, plates and shapes, at the same time extending 1.70c for a number of incomplete orders and pending projects. Whether a range of 1.75c to 1.80c will develop to cover preferred consuming groups is not clear, but mills have as a goal the single price of 1.80c, after protections on extended work expire. Specifications for most products are slightly above recent averages, due largely to shipping schedules submitted ahead of first quarter contract expirations. Bar orders are held up, due largely to automotive business from parts makers and assembly plants. Mills are hopeful of April increases in automotive steel. While road machinery builders are busy, specifications were not important during the week.

**New York**—Most steel bar sellers are asking 1.70c, Pittsburgh, on new business, with larger customers covered at 1.65c. While there is little forward business, recent specifications have been fairly active in view of the impending advance. Common iron bars continue at 1.60c to 1.70c, Pittsburgh, although the tone is slightly better, reflecting the situation in steel bars.

**Philadelphia**—Steel bars are firm at 1.65c to 1.70c, Pittsburgh. Spot tonnage is light, however. Iron bars are 1.60c, Pittsburgh.

**Pittsburgh**—Specifications for steel bars are heavier as the result of the quarter's conclusion. Second quarter contracting is also more active, with producers generally naming 1.65c, Pittsburgh. Most producers have announced 1.70c effective April 1 but this figure usually is not being quoted for contracts for that period. Heavier specifications recently in some cases will defer a test of the new price. March shipments and incoming business showed a moderate gain over those of February.

**Youngstown, O.**—Monday's mail brought to bar mills some additional first quarter 1.60c specifications which will be delivered in the impending quarter at mill's convenience. There also have come some second quarter tonnage at 1.65c, Pittsburgh, the newly announced second quarter contract price. It may be that 1.70c may not appear until later when buyers undertake to cover second quarter needs but find themselves without contracts for that period.

## Cold-Finished Bars Continue in Quiet Market

Cold Finished Prices, Page 81

**Pittsburgh**—Demand for cold-finished steel bars is quiet and unchanged. March shipments for most producers showed only a slight increase over those of February while new business also was light. Second quarter contracting is slow, with producers continuing to quote 2.10c, Pittsburgh.

**Cleveland**—New inquiry, aside from contract customers in the cold-finished steel bar market is conspicuously absent. Shipments are moderate. The market continues quotable at 2.00c to 2.10c, Cleveland. Most second-quarter contracts have been extended at unchanged levels.

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Colorado Fuel & Iron Co., Denver, stockholders will convene in special meeting April 28 at which time a vote will be taken on changing from $100 par common stock to no par common.

# Plates

**Specifications at Pittsburgh More Active—Chicago at 75 Per Cent—Prices Are Untested**

PLATE PRICES, PAGE 81

**New York**—Platemakers generally are quoting 1.80c, Coatesville, Pa., on current business. The old contract price of 1.70c apparently has disappeared, with 1.75c the price at which most contract buyers are covered. In certain instances large consumers have been granted a few days extension beyond the scheduled April 1 date in which to cover at this latter figure. Increased specifications on old contracts have improved operations slightly, with the general average now near 60 per cent. Aside from several thousand tons of plates for the New York Central's west-side warehouse terminal, on which the opening of bids was postponed until March 31, few outstanding orders are in immediate prospect. The Southern Prison Co., Columbus, O., has been awarded the general contract for the Riker's island penitentiary and is to place 1800 tons of 3/16-inch plates.

**Pittsburgh** — Plate specifications are more active and recent contracting also is heavier. Producers are quoting 1.65c, Pittsburgh, on second quarter contracts, with 1.70c named for the spot market for the new quarter. The higher prices have not been tested on large lots but are generally observed on smaller tonnages. River equipment orders include 500 tons of plates and shapes.

**Cleveland**—Price continues to be the foremost consideration in the plate market. Though one leading producer has named 1.65c to 1.70c, Pittsburgh, for second quarter another leading concern names as minimum 1.70c, Pittsburgh. Whatever contracting there is in the market for the second quarter apparently has had one effect, proving thus far the disappearance of the 1.60c, Pittsburgh, base. The past week has seen fewer specifications. However, many jobs for inquiry over the past winter and with origination dating even to last summer are expected to near a closing or decision stage. A boiler shop in this district is figuring on an unstated tonnage of plates for an Oklahoma development.

**Chicago**—Plate specifications from the western pipe welder are irregular and pointing downward, but 31,000 tons ordered last week will be scheduled on mill books soon, in addition to several other smaller pipe line orders. Plate mills are expecting enough business this month to hold operations at 75 per cent. Makers are extending incompleted work at 1.70c, and are asking 1.80c, Chicago, for new spot and contract sales. Backlogs for later than April are lacking. Oil tank work is negligible. Railroad buying is heavier.

**Birmingham, Ala.**—Plate demand continues active, tank and other fabricators operating above the average. However, a slight decrease in inquiry is noted.

**Philadelphia** — Protections have been given at 1.70c, Coatesville, Pa., on certain projects scheduled to be closed later, but platemakers gen-

erally are quoting 1.75c to 1.80c, with numerous second quarter contracts at 1.75c. Four thousand tons of plates are pending for ten scows for the American Dredging Co., Philadelphia. Forward business is light.

## Contracts Placed

4,000 tons, steel tunnel lining for Boston traffic tunnel, to Commercial Shearing & Stamping Co., Youngstown, O.; through Silas Mason & Co., New York, general contractor. James Russell Boiler Works Co., Boston, has shield contract.

315 tons, plates and shapes, oil barge for Atlantic Refining Co., to Dravo Contracting Co., Pittsburgh.

200 tons, plates and shapes, two barges for United States engineers, Pittsburgh district, to Dravo Contracting Co., Pittsburgh.

## Semifinished Market Slow; Prices Unchanged

**Semifinished Prices, Page 92**

**Pittsburgh**—New business in semifinished steel still lacks large volume while inquiry also is quiet. Shipments during March were moderately heavier than in February but buyers are slow to place future requirements. Producers continue to quote $30 for rerolling billets, slabs and sheet bars with $36 named for forging billets. Wire rods are $37.

**Youngstown, O.**—Contracts for billets, sheet bars and slabs for second quarter are conspicuous by their absence. Buyers apparently take the position they can fill their needs without difficulty at any time at present prices which are $30, Pittsburgh and Youngstown, for all three commodities.

**Cleveland**—Sheet bars, billets and slabs are being billed at $30, base, Cleveland and Youngstown, O. Few contracts naming specific tonnages have been booked for second quarter, consumers ordering as required. The rate is unchanged from recent weeks, and operations hold at nine out of 14 open hearths for the leading merchant producer.

**Chicago** — Moderate inquiry for second quarter semifinished steel is noted, but few contracts have been placed. The price of sheet bars is nominal at $31, Chicago. Billets, blooms and slabs are unchanged. Forging billets are $36, Chicago.

## Drawback Is Allowed

Washington—The treasury department has announced the allowance of drawback on steel wire rope manufactured by the Wire Rope Mfg. & Equipment Co., Seattle, with the use of imported steel wire.

# Railroads

**Contract for 1000 Refrigerator Cars Placed—Await Rail Inquiry—Spike Price Off $2 Ton**

**TRACK MATERIAL PRICES, PAGE 81**

**New York**—Car demand is featured by the placing of 1000 refrigerator cars by the Merchant's Despatch Inc. with its own shops. This and the recently noted award of 1050 hoppers for the Bessemer & Lake Erie are the two outstanding awards of the year to date. Total freight car awards for March involved 2249 cars, according to preliminary estimates. This compares with negligible amounts in the first two months this year. Passenger car buying is at a standstill; also fresh locomotive inquiry, although early action is expected in the award of at least 90 electric locomotives by the Pennsylvania railroad.

**Philadelphia**—March business in spikes and track bolts increased substantially. Spikes are 2.70c, Pittsburgh. The Pennsylvania and Reading are among recent principal buyers.

**Pittsburgh**—Bids are being asked on second quarter steel requirements for several railroads. The New York, New Haven & Hartford railroad is inquiring for 1000 kegs of spikes. Railroad spikes now are quoted 2.70c. mills, off $2 a ton. Specifications for track material are unchanged but slightly heavier than a month ago.

**Chicago**—Railroad orders of bars, plates, shapes and track fastenings have gained. Heavier specifications of finished steel products are due in part to the closing of quarterly business. Rail inquiries are being awaited from several of the western carriers that have not closed. The secondary rail buying period still is some weeks away, and it is not likely important secondary tonnages will be placed. Rail mill operations are 55 per cent, unchanged from the last two months. Great Northern will require about 3000 tons of steel for the 250 gondolas for which it is inquiring. Santa Fe railroad is planning track elevation work at Oklahoma City, Okla., to cost about $5,000,000. Western roads continue to cut operating expenses. Track fastening sales totaled 4000 tons.

## Car Orders Placed

East Jersey Railroad & Terminal Co., 17 tank cars, to American Car & Foundry Co., New York.

Hauser Construction Co., Portland, Oreg., eight 30-cubic yard air dump cars, to Magor Car Corp., Passaic, N. J.

L.C.L. Corp., 50 L.C.L. drop-side container cars and 300 containers, to American Car & Foundry Co.'s plant, Berwick, Pa.; cars are to be placed in service on New York Central.

Merchant's Despatch Inc., 1000 steel frame refrigerator cars, to Merchant's Despatch Transportation Co., Rochester Co., Rochester, N. Y.

## Locomotives Placed

Bush Terminal Co., seven oil-electric locomotives, 55 tons each, to Ingersoll Rand Co., New York. General Electric Co., Schenectady, N. Y., to furnish electrical equipment.

## Car Orders Pending

Great Northern, 250 hopper cars.

Standard Oil Co. of New Jersey, three tank cars.

## Locomotives Pending

Albany, N. Y., port district commission, one oil-electric locomotive.

## Iron Ore Prices Reaffirmed by Large Producers

**Iron Ore Prices, Page 92**

**Cleveland**—Large iron ore producers have submitted last year's prices on the inquiry from the Ford Motor Co. for 290,000 tons. No action is expected by the Ford company for about a week. This sale probably will set the market prices, as no other important inquiry is pending. Meanwhile, iron ore companies have let their regular customers know they expect no change in prices. Consumers are slow to indicate their new requirements, having considerable ore due them on last year's contracts.

## Brazilian Manganese Ore Prices Are Easier

**New York**—Reduction of 1 cent in the price of 46 to 48 per cent Brazilian manganese ore is the only change in the market. This ore now is 22 cents per unit in cargo lots, not including duty. Prices, however, are largely nominal, as spot buying is dull.

Foreign iron ores are moving slowly, with prices unchanged. Shipments of Swedish ore to consuming countries continue to decline. The amount in February was 306,000 tons compared with 363,000 tons in January.

# Structural Shapes

**Pennsylvania Awards 100,-900 Tons Among Eight Interests — Week's Awards Again Reach High Level at 143,904 Tons—Large Tonnages Not All Out of Market**

STRUCTURAL SHAPE PRICES, PAGE 81

**Philadelphia**—Pennsylvania railroad has allocated 100,900 tons of structural steel for work in the East, the major portions going to McClintic-Marshall Corp., Bethlehem, Pa., 34,000 tons, and American Bridge Co., Pittsburgh, 26,000 tons. Eight bidders shared in the award and others included: Shoemaker Bridge Co. Ingalls Iron Works Co., Fort Pitt Bridge Works, Mt. Vernon Bridge Co., Lehigh Structural Steel Co., and Phoenix Bridge Co.

Shapemakers are mostly quoting 1.80c, mill, on new tonnage, with most contract buyers covered at 1.75c, mill.

**New York**—Structural steel lettings are more numerous, topped by a 6300-ton award for a warehouse. The New York Central, St. Johns park terminal warehouse will take close to 65,000 tons of steel, although not all shapes, according to estimates. Additional bridge steel has been placed in northern New Jersey. Private construction continues light, but public requirements loom large. Recently announced pending mill price increases have failed to stimulate contracting for material. Fabricated steel prices are not showing much steadiness.

**Boston**—Steel for the East Boston tunnel, to be built for vehicular traffic under the upper part of Boston harbor, has been alloted, reaching an aggregate of 12,000 tons. All of this has gone to the Commercial Shearing & Stamping Co., Youngstown, O., though 2000 tons of concrete bars in the award it is understood will be furnished by Bethlehem Steel Co.

**Pittsburgh** — Structural shape awards call for only small lots and lack improvement in number. Specifications for plain material are slightly more active but still are quiet. Producers usually are quoting 1.70c, Pittsburgh, on the spot market with contracts taken at 1.65c. The market lacks a test on tonnage buying.

**Cleveland** — Small jobs taking shapes continue to be closed, but large work is slow. Active inquiry has been added to with a 400-ton plant addition to the Kelly Island Lime & Transport Co. at Clay Center, O.; 300 tons for a candy plant for the William Hardie Co., Cleveland; 250 tons in the Harrison avenue bridge, Canton, O.; 375 tons in a plant for the Hocking Glass Co., Lancaster, O.

**Chicago**—Both structural material sales and specifications gained during the wek. Sales largely were spot or in the nature of protections for unexpired work. Second quarter inquiry is fair. Bids will be taken about April 10 for the Marshall Field Estate building, to cost $12,000,000. Structural steel for the two units of the building group will be upwards of 25,000 tons. Structure will be on a 4-story base, from which a central tower of 43 stories, and 4 sections of 22 stores each will arise.

## Contracts Placed

100,900 tons, Pennsylvania railroad requirements, including approximately 47,000 tons for steel poles, cross arms and braces; 24,000 tons, station and platform work, Newark, N. J.; and 18,000 tons for passenger station, Philadelphia. Total award allocated as follows: McClintic-Marshall Corp., Bethlehem, Pa., 34,000 tons; American Bridge Co., Ambridge, Pa., works, 26,-000 tons; Shoemaker Bridge Co., Pottstown, Pa., 14,000 tons; Ingalls Iron Works Co., Verona, Pa., works, 13,000 tons; Mt. Vernon Bridge Co., Mt. Vernon, O., 4300 tons; Fort Pitt Bridge Works, Canonsburg, Pa., works, 4000 tons; Lehigh Structural Steel Co., Allentown, Pa., 4000 tons; and Phoenix Bridge Co., Phoenixville, Pa., 1600 tons.

9000 tons, government hangars, Wright field, Dayton, O., to Belmont Iron Works, Philadelphia, and Ingalls Iron Works, Birmingham, Ala., in addition to 4000 tons noted in STEEL of March 26 as going to Belmont Iron Works, which took approximately 65 per cent of total of 13,000 tons

6300 tons, 8-story warehouse, West End avenue, Sixty-fourth to Sixty-fifth streets, New York, to unstated fabricator. De Pace & Juster, architects.

6000 tons, East Boston tunnel, to Commercial Shearing & Stamping Co., Youngstown, O., made up of the following: 500 tons, angles; 500 tons, channels; 2500 tons plain material; 2500 tons, rails.

3000 tons, stable building, Canadian National exhibition, Toronto, Ont., to Dominion Bridge Co., Quebec, Que.

2500 tons, Dorechester street bridge, Montreal, Que., to Dominion Bridge Co., Quebec, Que.

2000 tons, track elevation, Bellwood, Ill., for Indiana Harbor Belt Line railroad, to Mississippi Valley Structural Steel Co., Chicago.

1360 tons, Administration building, 369th infantry, 142nd street and Fifth avenue, N. Y., to Harris Structural Steel Co., New York; C. & W. Construction Co., general contractors. This award given as 1000 tons going to unstated fabricator last week.

925 tons, bridges for Western Pacific railroad, San Francisco, allocated as follows; to Virginia Bridge & Iron Co., Roanoke, Va., 125 tons; to McClintic-Marshall Corp., Bethlehem, Pa., 300 tons; and to Columbia Steel Co., San Francisco, 500 tons.

810 tons, four bridges, route 4, section 4, Bergen county, N. J., to American Bridge Co., Pittsburgh; Bates & Rogers, general contractors.

800 tons, library, University of Southern California, Los Angeles, to Consolidated Steel Corp., Los Angeles.

709 tons, including 624 tons I-beams, bridges, Nechez river and Navasota river, Texas, to Petroleum Iron Works, Beaumont, Tex.; 85 tons, truss span bridge, Nechez river project, to Virginia Bridge & Iron Works, Roanoke, Va.; Thomas & Ratliff, Rogers Tex., general contractors.

700 tons, additions and alterations, Lincoln hospital, Concord avenue, 141st to 142nd streets, Bronx, N. Y., to unstated fabricators; Robert J. Murphy Co., general contractor.

700 tons, high level bridge, Edmonton, Alta., to Canadian Bridge Co., Walkerville, Ont.

550 tons, Roosevelt memorial building, Museum of Natural History, Central park west and Seventy-fourth street, New York, to Harris Structural Steel Co., New York; J. Harry McNally Inc., general contractor.

550 tons, apartments and garages, Brooklyn and Queens, N. Y., including one, Eighteenth street between Avenue S and T, Flatbush, to Gaynor & Rosenblum, Brooklyn, N. Y.

550 tons, bridges for Western Pacific railroad, to American Bridge Co., Pittsburgh.

505 tons, bridges, route 4, section 3, Bergen county, N. J., to Harris Structural Steel Co., New York; Liddle & Pfeiffer, Perth Amboy, N. J., general contractors.

500 tons, building, Consolidated Gas Co., York avenue and Sixty-third street, New York, to Levering & Garrigues Co., New York.

500 tons, bridge over North Platte river, North Platte, Nebr., to Omaha Steel Works, Omaha, Nebr.

431 tons, Jenkins Music Co. building, Kansas City, Mo., to Kansas City Structural Steel Co., Kansas City, Mo.

400 tons, highway bridge at Gascanade, Mo., to Stupp Bros. Bridge & Iron Co., St. Louis.

380 tons, steel decks for Chicago, Rock Island & Pacific railroad bridge over Mississippi river, Davenport, Iowa, to McClintic-Marshall Corp., Bethlehem, Pa.

350 tons, building, Glosser department

## Awards Compared

| | Tons |
|---|---|
| **Awards this week** | **143,904** |
| **Awards last week** | **31,151** |
| **Awards two weeks ago** | **146,484** |
| **Awards this week in 1930** | **25,617** |
| **Av. weekly awards, 1930** | **35,242** |
| **Av. weekly awards, 1931** | **46,075** |
| **Av. weekly awards, March** | **64,860** |
| **Total awards to date, 1930** | **450,765** |
| **Total awards to date, 1931** | **645,067** |

store, Johnstown, Pa., to Griffith-Custer Steel Co., Johnstown, Pa.; Thiele Construction Co., Johnstown, general contractor.
300 tons, Chicago & North Western railroad, Wyewood, Wis., to American Bridge Co., Pittsburgh.
300 tons, flooring, Hudson river bridge, New York, to Globe Iron Works, New York; Corbetta Concrete Co., general contractor.
300 tons, bridge for Chesapeake & Ohio railroad at Winchester, O., to American Bridge Co., Pittsburgh.
300 tons, addition to Grace cathedral, San Francisco, to Judson-Pacific Co., San Francisco.
250 tons, highway bridge, Salt Creek, Wyo., to Omaha Steel Works, Omaha, Nebr.
250 tons, hospital, Milwaukee, to Lakeside Bridge & Steel Co., North Milwaukee, Wis.
250 tons, bridge, New Orleans, to Wisconsin Bridge & Steel Co., North Milwaukee, Wis.
250 tons, Baker residence, Washington, to Lehigh Structural Steel Co., Allentown, Pa.
250 tons, 14 dredge pontoons, Mississippi river work, for United States engineers, St. Louis, to St. Louis Structural Steel Co., East St. Louis, Ill.
235 tons, highway bridge, Mack, Colo., to Minneapolis-Moline Power Implement Co., Minneapolis.
225 tons, subway for Canadian National railways, Saskatoon, Sask., to Dominion Bridge Co., Winnipeg, Man.
200 tons, school addition, New Rochelle, N. Y., to George J. Schantz Iron Works, Bronx, N. Y.
200 tons, loft, Lexington avenue and Seventh street, New York, to Paterson Bridge Co., Paterson, N. J., through J. H. Taylor Co., general contractor.
200 tons, Nurses' home, Greenpoint avenue, Brooklyn, N. Y., to unstated fabricator.
170 tons, state hospital for disabled soldiers, Menlo park, N. J., to B. Ketchen Iron Works.
170 tons, state school, Trenton, N. J., to Richard de Cou Co., Philadelphia.
125 tons, Town hall, Islip, Long Island, N. Y., to Harris Structural Steel Co., New York.
109 tons, bridge over Lytle creek, San Bernardino county, Calif., to unnamed company.
100 tons or more, apartment, Ocean avenue, Brooklyn, to Kalter Iron Works, Brooklyn, N. Y.
100 tons, bridge, Rochester, N. Y., to Kellogg Structural Steel Co., Buffalo.
100 tons, Y. M. C. A. building, Youngstown, O., to Guibert Steel Co., Pittsburgh.
100 tons, highway work, State of Ohio to Burger Iron Works, Akron, O.

## Contracts Pending

25,000 tons, estimated, Marshall Field estate building, Chicago; bids April 10.
6000 tons, bascule bridge for outer drive bridge, Chicago.
3500 tons, hotel, Oklahoma City, Okla.
2000 tons, Kimball avenue bridge, Chicago.
2000 tons, general exhibition building for Chicago Century of Progress exposition, Leif Erikson drive, Chicago; bids in.
1200 tons, Walnut street municipal bridge, Philadelphia; A. M. and J. B. McCue awarded general contract.
1200 tons, bridgework, proposed belt line for Milwaukee Electric Railway & Light Co.; project delayed pending permission from Milwaukee county board of supervisors.
1200 tons, bridge, University avenue, Philadelphia.
1200 tons, state highway bridges, New York; bids in.
1200 tons, Sixth street bridge, Los Angeles; bids April 29.
950 tons, Somers Point-Ocean City bridge, N. J.; bids in.
840 tons, state bridge, Ocean City, N. J.; Eastern Engineering Co., Atlantic City, N. J., low on general contract.
800 tons, bridge, Lock Haven, Pa., Pennsylvania railroad; bids in.
800 tons, Illinois highway bridges.
600 tons, Wabash avenue viaduct, Chicago.
600 tons, highway bridges in Michigan.
600 tons, theater, Seventy-second street and Third avenue, New York.
550 tons, bridge, Fort Lee, N. J.; bids April 20.
500 tons, Santa Fe railroad viaduct, Mercede, Calif.
500 tons, addition, Y. M. C. A., Jersey City, N. J.
430 tons, bridge, Southboro-Framingham, Mass.
400 tons, plant extension, Clay Center, O., for Kelly Island Lime & Transport Co.
375 tons, plant, Lancaster, O., for Hocking Glass Co.
350 tons, two bridges, New Hampshire; bids April 2.
330 tons, bridge, Pembroke-Allentown, N. H.
320 tons, pier 15, San Francisco; bids received.
300 tons, administration building, Yale university, New Haven, Conn.
300 tons, plant, for William M. Hardie Co., 2260 East Sixty-ninth street, Cleveland; J. E. A. Moore, 1900 Euclid avenue, architect.
250 tons, bridge, Hingham-Hull, Mass.
250 tons, Harrison avenue bridge, Canton, O.
250 tons, Eau Claire river bridge, Wausau, Wis.
200 tons, interior work, Rosenwald Museum, Chicago.
200 tons, two 100-ton bridges, for Michigan highways.
125 tons, state highway bridges, Sauk county, Wisconsin; Wausau Iron Works, Wausau, Wis., low.
150 tons, court house extension, Portland, Me.
125 tons, school, Boardman, O.
100 tons, state bridge, Atlantic City, N J.; H. W. Bratinger, Bridgeton, N. J., low on general contract.
Unstated, steel girder viaduct, Thirty-fifth street, Milwaukee; plans ready after May 15. Structure to be 3500 feet long with 30 to 35 spans, appropriation $1,600,000. M. C. Cutler, superintendent of bridges and public buildings.
Unstated tonnage, bridge, Lorain and Chatham avenues, for Cleveland Union Terminals Corp., Cleveland.

# Concrete Bars

**Heavier Awards Are Sustained—Mill Bookings Seasonally Large—Road Mesh Work Expands in East—Price Unsteadiness Noted—Awards Are 10,870 Tons**

REINFORCING BAR PRICES, PAGE 81

**New York**—Demand for road mesh is developing in volume about one month earlier than usual. Mesh prices are holding fairly steady. Highway work in upper New York state and New Jersey is heavy. Pending volume in reinforcing bars is heavy. Bids went in this week on foundations for St. Johns park terminal warehouse, New York Central, about 2100 tons. Prices are weak on large lots, 1.65c, Pittsburgh, being shaded. Bids are in on additional bridge work, New Jersey, one calling for 1275 tons.

**Pittsburgh**—Local awards of reinforcing bars are headed by 850 tons for foundation of the new post-office. Inquiry of Pennsylvania railroad for 8500 tons still is pending. Several other large lots are involved in eastern projects. Incoming tonnage to mills is seasonally heavy and compares favorably with a year ago. Announcement of a new price for second quarter is lacking.

**Cleveland**—Cincinnati Union Terminal, Cincinnati, takes 1300 tons of concrete bars, general contract for which was awarded to James Stewart Co., New York, over local contractor's bid. A bridge for the Nickel Plate on Woodland avenue and a bridge for the Cleveland Union Terminals Corp., locally head the list of new inquiry. Prices remain 1.65c to 1.70c, Cleveland base. Award of size is generally lacking though Medina placed approximately 100 tons for a sewage plant with Hardware & Supply Co., Akron, O.

**Chicago**—Recent heavier lettings in reinforcing bars are sustained. Fabricators, contractors and architects are working on voluminous inquiries, individually of small lots. Rail steel bars for road, bridge and

(*Concluded on Page* 89)

## Awards Compared

| | Tons |
|---|---|
| Awards this week | 10,870 |
| Awards last week | 18,744 |
| Awards two weeks ago | 5,324 |
| Awards this week in 1930 | 5,410 |
| Av. weekly awards 1930 | 6,990 |
| Av. weekly awards, 1931 | 7,716 |
| Av. weekly awards, March | 12,367 |
| Total awards to date, 1930 | 89,433 |
| Total awards to date, 1931 | 107,998 |

# Strip

**Better Volume of Demand but Not Sufficient to Test Advanced Prices for Second Quarter**

STRIP PRICES, PAGE 81

**Pittsburgh**—Strip steel has lost some of its recent activity but continues in substantially better demand than a month ago. March shipments for some producers were 20 per cent larger than in February, mostly as the result of improved automotive activity. Second quarter contracting is slow, with larger buyers finding little difficulty in obtaining prices prevailing during the first quarter. These were 1.65c and 1.55c for hot strip and 2.25c for cold rolled strip. Small users have placed some contracts at the advances of $1 a ton on hot strip and $2 on cold strip announced for second quarter. Mill operations are unchanged at 55 to 60 per cent for hot strip and 25 to 30 for cold strip.

**New York**—Hot strip demand is showing little improvement, with the recently announced advance still subject to test. Meanwhile, the market may be quoted 1.55c to 1.60c, Pittsburgh, for wide, and 1.65c to 1.70c, for narrow. Cold-rolled is 2.25c to 2.35c. To date most of such business as has been placed has been at the inside figures.

**Philadelphia**—Hot strip is moving mostly at old figures of 1.55c, Pittsburgh, on wide and 1.65c on narrow. Cold rolled is generally at 2.25c on light trading.

**Youngstown, O.** — Lessened demand for certain forms of strip employed largely by auto partsmakers has been noted the past several days. This has reduced strip mill production this week. Quotations on both hot and cold-rolled strip are reported unchanged.

**Cleveland**—Demand is unchanged, spottiness in customers' orders dominating both hot and cold-rolled. Newly announced price advances of $1 a ton on hot and $2 up on cold have met with general reversal. Though some sales have been made recently at 2.35c, Cleveland, on cold-rolled, in itself representing an advance, the market on hot-rolled has virtually returned to first-quarter levels of 1.55c and 1.65c, Pittsburgh, on wide and narrow, respectively, and the new prices of 1.60c and 1.70c have been absent.

**Chicago**—Possibility is seen that the second quarter price policy of cold-rolled stripmakers for a quotation of 2.35c, Pittsburgh-Cleveland, may not become established. Thus far the price is practically untested. Some second quarter inquiry is noted. Hot-rolled strip operations have been gaining, with operations at 45 to 50 per cent. Little second quarter business in hot-rolled has been placed.

## Warehouse Sales Continue Irregular in Character

Warehouse Prices, Page 103

**New York**—Buying from warehouse shows a slight improvement, sellers in some instances reporting a gain of 5 per cent in volume. The increase is most noticeable for shapes, plates and small lots of concrete bars. Prices are somewhat mixed. Cold drawn products are steady.

An extra charge of 1.00c a pound is being made by several warehouses for broken bundles of black and galvanized sheets. New Jersey jobbers are quoting 25.00c on 100 pounds extra for black or galvanized sheets on 10-bundle orders or smaller.

**Boston**—The only redeeming feature of warehouse business centers in a fair amount of small jobs.

**Philadelphia**—Warehouse buying is light. Some jobbers report a slight daily gain in March tonnage. Aside from a more general application of mill widths extras on galvanized sheets, prices are unchanged.

**Pittsburgh** — Demand fails to broaden, March business barely holding at the February rate. Prices are unchanged and no revisions are expected as the result of recent advances in mill quotations.

**Cleveland** — Shipments of stock from warehouses in March are variously estimated by jobbers to be from 5 to 15 per cent higher than in February. Prices continue unchanged. Bars, shapes and sheets continue to move in encouraging volume.

**Cincinnati**—March sales of warehouses was better than January or February, but disappointing when compared to the usual seasonal upturn. Prices are unchanged.

**Chicago**—March warehouse steel sales were about 5 per cent ahead of February. Orders are exceedingly small. Prices are steady.

**St. Louis**—Warehousemen report business extremely irregular and spotty. March volume is expected to make a relatively fair showing. Aside from galvanized sheets and No. 24 black, prices remain unchanged.

## Operations Recede One Point for Second Week

**Pittsburgh** — Operations of steel plants are steady. Ingot production continues moderately above 50 per cent with the number of active steel works blast furnaces reduced by one to 21 out of 54 in the district. Sheet and tin plate output are unchanged at 45, and 75 to 80, respectively. Strip production continues 55 to 60 with pipe unchanged at 35 and wire at 45.

**Philadelphia**—Eastern ingot operations this week are at 49 per cent of capacity, down two points. A leading interest is operating at approximately 51 per cent, also a recession of two points.

**Buffalo**—Buffalo steelworks are up three points to 49 per cent capacity this week.

**Youngstown, O.**—Ingot operations have receded this week approximately three points to 48 per cent capacity for plants in this district.

**Cleveland**—Ingot production is at 62 per cent of capacity of district mills this week, a decline of six points with the taking from the active list of two open hearths. Of 34 furnaces, 21 are active this week.

**Chicago**—Ingot production again is unchanged, remaining at 60 per cent. Sixteen of the 36 steelworks blast furnaces are active. For the third successive week sheet mill production is at 70 per cent. Bar mills are 60, plate mills 75, and structural mills about 50 per cent.

**Birmingham, Ala.**—The 65 per cent ingot capacity operating schedule is expected to continue for April. Open hearth furnaces active are steady at 16 of 23, with the new 14-ton furnace of T. C. I. & R. R. Co. soon to be finished.

## Tin Plate Activity Holds To Improved Rates

Tin Plate Prices, Page 81

**Pittsburgh** — Tin plate specifications and operations hold recent gains, output continuing around 75 to 80 per cent. Specifications are in unchanged volume but are sufficient to maintain present operating schedules without any reduction in backlogs. Tin plate remains $5, Pittsburgh, per base box.

## Concrete Bars

(*Concluded from Page* 85)

culvert work are steady at 1.65c to 1.75c. Awards amount to about 800 tons, including numerous small lots, exclusive of 1200 tons formally closed for Ft. Wayne, Ind., filtration basin.

## Contracts Placed

2000 tons, Boston, East Boston tunnel, to Commercial Shearing & Stamping Co., Youngstown, O., through Silas Mason & Co., New York, general contractors; steel reported to be furnished by Bethlehem Steel Co., Bethlehem, Pa.

1200 tons, filtration plant, Ft. Wayne, Ind., to Joslyn Mfg. & Supply Co., Ft. Wayne, Ind.

1000 tons, highway and bridges, interborough parkway, Queens, N Y., to Concrete Steel Co., Pittsburgh, through Welsh Bros. Contracting Co.

1000 tons, subway, Jamaica, N Y., to Concrete Steel Co., Pittsburgh.

850 tons, foundation for Pittsburgh postoffice building to Truscon Steel Co., Youngstown, O.

800 tons, highway and bridge approach route 42, section 6, Weymouth to McKee City, N. J., to American Steel & Wire Co., Chicago, through M. B. Tomlin, Atlantic City, N J., general contractor.

500 tons, Gold Beach bridge, Rogue river, Oreg., to unnamed interests, through Mercer & Fraser, Eureka, Calif., general contractors.

280 tons, track elevation for Indiana Harbor Belt Line railroad, Bellwood, Ill., to Kalman Steel Co., Chicago.

280 tons, bridges, Nechez river and Navasota river, Texas, to Alamo Iron Works, Houston, Tex.; Thomas & Ratliff, Rogers, Tex., general contractors.

250 tons, bridges, Commanche county, Texas, Texas state highway commission, to Sheffield Steel Corp., Kansas City, Mo.; J. Floyd Malcolm & Co., Abilene, Tex., general contractor.

250 tons, bridges on route 4, section 3, Bergen county, N. J., to Joseph T. Ryerson & Son Inc., Chicago, through Liddle & Pfeiffer, general contractors.

235 tons, bridges between Arcola and Hackensack river, N. J., to Joseph T. Ryerson & Son Inc., Chicago.

235 tons, St. Mary's convent, San Antonio, Tex., to Laclede Steel Co., St. Louis.

200 tons, foundation, parcel post building, New York, to Fire Proof Products Corp., New York.

200 tons, sewer construction, Bronx, N. Y., to Concrete Steel Co., Pittsburgh.

200 tons, library, University of California, Los Angeles, to unnamed company.

200 tons, Goldberg store and office building, 3129 Lincoln avenue, Chicago, to Calumet Steel Co., Chicago.

200 tons, highway work in Imperial county, Calif., to unnamed company.

190 tons, highway construction work, New Mexico, to Laclede Steel Co., St. Louis.

150 tons, city work, Holyoke, Mass., to Joseph T. Ryerson & Son Inc., Chicago.

150 tons, bridge, route 1, section 6, Newark, N. J., to Concrete Steel Co., Pittsburgh, paving reinforcing bars to Truscon Steel Co., Youngstown, O. George M. Brewster & Son Inc., Bogota, N. J., general contractors.

100 tons, Illinois road work, to Concrete Engineering Co., Chicago.

100 tons, Institution for the Blind, Batavia, N. Y.; to an unstated Buffalo producer.

100 tons, bars and joists, building, Glosser department store, Johnstown, Pa., to McClintic-Marshall Corp. and Bethlehem Steel Co., Bethlehem, Pa.; Thiele Construction Co., Johnstown, Pa., general contractor.

100 tons, grade crossing elimination, Staten Island, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa., through W. H. Gahagan Co., general contractor

100 tons, sewage disposal plant, Medina, O., to Hardware & Supply Co., Akron, O.

## Contracts Pending

4000 tons, Sixth street bridge, Los Angeles; bids April 29.

1300 tons, Cincinnati Union Terminal, Cincinnati, general contract to James Stewart Co., New York, at $5,899,000.

1275 tons, state bridge, Ocean City, N. J.; Eastern Engineering Co., Atlantic City, N. J., low on general contract.

700 tons, Kenmore subway station, Boston; transit commission takes bids soon.

500 tons, road work, Massachusetts; bids in April.

416 tons, highway work, Monterey county, Calif.; bids received.

254 tons, highway work, San Matoe county, Calif.; bids April 18.

248 tons, highway work, San Diego county, Calif.; bids received.

200 tons, hospital, Aurora, Ill.

150 tons, municipal bridge, Akron, O.

138 tons, highway work, Los Angeles county, Calif.; bids April 15.

105 tons, state bridge, Atlantic City, N. J.; H. W. Bratinger, Bridgetown, N. J., low on general contract.

100 tons, intake for water project, Greenwich, Mass.

Unstated tonnage, one main building, garage and attendant's quarters, United States veterans' hospital, Salt Lake City, Utah; bids received United States Veterans' bureau, room 764, Arlington building, Washington, until April 30.

## Obituaries

(*Concluded from Page* 31)

Chicago, in 1888 and he remained interested in it for several years. It absorbed several railway equipment concerns and the consolidated company was sold in 1899 to Chicago Railway Equipment Co.

□ □ □

George L. Pettibone, 55, of the Rock Island Plow Co., Rock Island, Ill., died March 13. He had been associated with Emerson-Brantingham Mfg. Co. for 22 years as branch manager at Harrisburg Pa., and at Dallas, Tex.

□ □ □

Andrews Allen, 61, president of Allen & Garcia Co., Chicago, consulting engineers, died March 21 in Jasper, Ala., where he was directing engineering contracts. He was to leave shortly for Russia, where his company had contracts. Mr. Allen also was vice president of Allith-Prouty Co., Danville, Ill. He founded Allen & Garcia Co. in 1898. Prior to that he had prepared geological surveys for the government.

# Pipe

**State Work Fair in East but Prices Are Weak—Detroit to Take 2400 Tons of Cast**

SHEET PRICES, PAGE 81

**New York**—Cast pipe volume has dropped with New York having opened bids and closed on about 12,500 tons for four boroughs, first half yard stocks. Prices are weak, well under $34, eastern foundry, being noted on a large part of recent volume. State hospital and prison work continues to take a fair tonnage. No action is reported on 3200 tons for Massapequa, N. Y., while 3700 tons still pends for Wards Island sewage plant and several thousand for the Riker's island penitentiary. Utilities are not buying actively.

**Pittsburgh**—Pipe demand still is light and shows only a slight and less than seasonal improvement since a month ago. Activity in standard pipe is slow to increase, while conditions in the oil industry are reflected in light demand for oil country goods. Line pipe buying is disappointing, awards being deferred.

**Chicago**—Detroit opened bids the first of the week for 2400 tons of 12-inch cast, and Chicago will defer closing on 3500 tons of 6 to 12-inch until after city elections April 7. About 400 tons will be bought for filtration works at Ft. Wayne, Ind., and Winnetka and Lake Forest, Ill. A number of small jobs are up in Ohio. Six to 24-inch delivered is quoted $42.20 to $44.20, Chicago.

**St. Louis** — Magnolia Petroleum Co., Dallas, Tex., has announced it will construct an oil pipe line from the Kilgore field to a connection with the Magnolia line running from Arkansas to Neches, Tex. The new line will be 70 miles long, of 10-inch pipe and cost about $850,000.

**Birmingham, Ala.**—One shop has added to labor forces this week and will speed up production. Shipment of pipe is assuming activity. Opera-

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tions are around 70 per cent capacity. Lower price, $35.00 to $36.00 on six-inch and over sizes has become recognized throughout the country.

## Cast Pipe Placed

6000 tons, 20 to 54-inch class C, Milwaukee, to United States Pipe & Foundry Co., Burlington, N. J., at $38.40 per ton for plain and $48.40 for lugged.

918 tons, 12-inch, for Vancouver, B. C., divided between Gordon & Belyea, Ltd., and Evans, Coleman & Evans, Vancouver, B. C., for British-made pipe.

765 tons, 4, 6, and 8-inch class C and D, for Burnaby improvement, Edmonds, B. C., to Evans, Coleman & Evans, Vancouver, B. C., for British pipe.

350 tons, Yarmouth, Mass., various sizes, to United States Pipe & Foundry Co., Burlington, N. J.

300 lengths, West Springfield, Mass., 6-inch, to Warren Foundry & Pipe Co., Phillipsburg, N. J.

250 tons, 4 to 14-inch class C, Rhinelander, Wis., to James B. Clow & Sons, Chicago, at $10,150; bids on per foot basis.

200 tons, seamless tube steel pipe, for Vancouver, B. C., to Leith, Murray & Co. Ltd., representing French manufacturers.

188 tons, Leominster, Mass., 16-inch, to R. D. Wood & Co., Philadelphia.

185 tons, Massachusetts private water interest, 10-inch, to Donaldson Iron Co., Emaus, Pa.

150 tons, Saugus, Mass., 6 to 12-inch to McWayne Pipe Co., Birmingham, Ala.

116 tons, Leominster, Mass., 8-inch, to R. D. Wood & Co., Philadelphia.

50 lengths, West Springfield, Mass., 4-inch, to Warren Foundry & Pipe Co., Phillipsburg, N. J.

## Steel Pipe Placed

24,000 tons, 131 miles 24-inch, for Southern Fuel Co., gas line between Kettleman Hills, Calif., and Los Angeles, to A. O. Smith Corp., Milwaukee.

4500 tons, 24 to 36-inch welded, Los Angeles, allocated as follows: to Western Pipe & Steel Co., Los Angeles, 3000 tons; and to Consolidated Steel Corp., Los Angeles, 1500 tons.

880 tons, 30-inch welded, East Bay municipal utility district, Oakland, Calif., to Steel Tank & Pipe Co., Berkeley, Calif.

121 tons, electric welded pipe, for United States engineers, St. Louis, to McClintic-Marshall Corp., Bethlehem, Pa.

## Cast Pipe Pending

10,000 feet, Revere, Mass., 6 to 12-inch; bids open week of March 30.

4507 lineal feet of 8-inch, 13,094 feet of 6-inch and 590 feet of 20-inch, also 21 hydrants, Oakfield, Fond du Lac county, Wis.; bids close April 10.

2400 tons, 12-inch, for Detroit; bids March 30.

520 tons, Watertown, Mass., bids open week of March 30.

400 tons, miscellaneous sizes, for Ft. Wayne, Ind., Winnetka and Lake Forest, Ill., filtration works.

246 tons, Natick, Mass., 12-inch, bids open week of March 30.

136 tons, 4 to 10-inch, National Guard training camp near San Luis Obispo, Calif.; bids received.

135 tons, 6 to 12-inch, class B, Glendora, Calif.; bids March 31.

# Wire

**Test of Advanced Prices Not Yet Made—Some Contracts Are at Higher Level**

WIRE PRICES, PAGE 81

**Pittsburgh**—Higher prices on wire products announced for second quarter remain to be tested. Recent specifications have been heavier and will tide users over for a short period before new buying is necessary. Producers are quoting $2 a keg to jobbers for wire nails, 2.30c for plain wire and $37 for wire rods. March shipments and incoming business were moderately heavier than in February, with wire mill operations at around 40 to 50 per cent, representing an advance of about ten points since a month ago.

**Worcester, Mass.**—With some acceleration from building sources production remains slightly above 50 per cent where it has been for several weeks. Shipments are more frequent and the higher volume encourages producers to look for continued slight improvement until mid-summer. Prices are firm.

**New York**—While some leading sellers of wire products expect the new quarter to develop generally higher prices, the current market on nails continues at $1.90 to $2, Pittsburgh, and on plain bright wire at 2.20c to 2.30c, Pittsburgh. In fact, only in wire rods, now holding at $37, Pittsburgh, has the advance seemed to have taken a firm hold. Demand for both nails and wire has slightly improved, especially in wire.

**Cleveland**—Contracting for second-quarter, at the $2 advance in wire products except fencing, is slow. Larger consumers show little interest in the new prices and continue to release on contracts which will tide them over for some time. In the meantime, prices have been nominally announced at $2, to $2.10 a keg on nails; 2.30c on plain wire and 3.30c on spring wire. Material continues to be released at $2 under these figures.

**Chicago**—A few smaller buyers have signed second quarter contracts on the basis of the new prices. Inquiries have been light. Both jobber and dealer sales of common wire products during March gained slightly over February. Manufacturers' wire is moving more slowly after the recent upturn, which lasted about two weeks.

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The fifth annual Southwest Welding conference is to be held April 22-23 at Arlington, Tex. It is sponsored by the engineering and trades department of North Texas Agricultural college at Arlington. Several prominent welding authorities will be among the speakers.

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## Bolts, Nuts, Rivets Fail To Increase Activity

Bolts, Nuts, Rivets Prices, Page 81

**Pittsburgh**—Recent specifications for bolts, nuts and rivets reveal no improvement over activity of preceding weeks and the month's business was little changed from that of February. Orders continue limited in size as well as number. Second quarter contracting is nearly complete with the market remaining 73 off for bolts and nuts and 2.75c for large rivets. Operations hold around 35 per cent.

**New York**—Bolt and nut demand remains light, with prices unchanged and easy at 73 off list. Rivets are 2.75c, Pittsburgh. Eastern plants continue to operate at around 35 per cent.

**Philadelphia** — Miscellaneous demand for bolts is sluggish and easy at 73 off. It is estimated that 750 tons of galvanized bolts will be needed in the Pennsylvania railroad electrification work, on which prices will be asked by fabricators.

**Cleveland**—Releases for local bolt and nut plants continue in moderate volume, with slight improvement in specifications from the automotive industry. The price at 73 off list continues firm. Rivets are unchanged at 2.75c, Cleveland.

**Chicago**—No change is noted in specifications for bolts and nuts. March business closed a few points ahead of February. Automotive buyers are the principal customers. The implement outlook is discouraging. Second quarter contracting is completed on the basis of 73 off for nuts and bolts.

---

## Steel Castings Are Let

Philadelphia — Morris Machine Works, Baldwinsville, N. Y., has been awarded the contract for steel castings for pumps and other work by the army engineer, Philadelphia, on a bid of $12,704.

# Raw Material Prices

## Pig Iron

**Per Gross Ton**

**FOUNDRY, NO. 2**

| | |
|---|---|
| Chicago furnace | $17.50 |
| Pittsburgh, dist. fur. | 17.50 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Valley furnace | 17.00 |
| Cleveland fur., local del. | 17.00 |
| Philadelphia, delivered | 17.76 |
| Virginia, furnace | 17.75 |
| Granite City, Ill., fur. | 17.50 |
| Buffalo, fur., local del. | 17.50 |
| Buffalo, del. Boston | 21.41 to 21.91 |
| Buff., all-rail, Brooklyn | 19.91 to 20.91 |
| Buff., all-rail Newark | 18.28 to 18.78 |
| Ala., Bir. fur., local del. | 12.00 to 13.00 |
| Alabama, del. Chicago | 17.01 |
| Alabama, del. St. Louis | 15.42 |
| Alabama, del. Cincinnati | 14.69 to 15.19 |
| Ala., Phila., dock del. | 16.25 |
| Ala., Balt., dock del. | 16.00 |
| Alabama, New York dock | 16.50 |
| Ala., Boston dock del. | 16.75 |
| Tenn., Bir. base, local del | 13.00 |
| Tennessee, del. Cinn. | 14.69 to 15.19 |
| Montreal, delivered | 23.50 |
| Toronto, delivered | 22.10 |

**FOUNDRY, NO. 2X**

| | |
|---|---|
| Buffalo, fur., local del. | 18.00 |
| Buff., all-rail, Brooklyn | 20.91 to 21.41 |
| Buffalo, all-rail Newark | 18.78 to 19.28 |
| Buffalo, del. Boston | 21.91 to 22.41 |
| Virginia furnace | 18.25 |
| Eastern, del. Phila. | 18.26 |

**FOUNDRY, NO. 1X**

| | |
|---|---|
| Buffalo fur., local del. | 19.00 |
| Eastern, del. Phila. | 18.76 to 19.26 |

**MALLEABLE**

| | |
|---|---|
| Valley furnace | 17.00 |
| Cleveland fur., local del. | 17.00 |
| Pittsburgh dist. fur. | 17.50 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Chicago, furnace | 17.50 |
| Buffalo fur., local del. | 18.00 |
| Eastern Penna., delivered | 18.26 to 20.91 |
| Granite City, Ill., fur. | 17.50 |
| Montreal, delivered | 24.00 |
| Toronto, delivered | 22.60 |

**BASIC**

| | |
|---|---|
| Pittsburgh, district fur. | 17.50 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Eastern Penn., del. | 17.25 to 17.75 |
| Buffalo fur., local del. | 17.00 |
| Montreal, delivered | 20.50 |
| Valley, furnace | 17.00 |

**BESSEMER**

| | |
|---|---|
| Valley furnace | 17.00 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Pittsburgh, furnace | 17.50 |

**LOW PHOS.**

| | |
|---|---|
| Valley fur., standard | 27.00 |
| Philadelphia, standard | 24.76 to 27.79 |
| Copper-bear., E. Pa. fur. | 22.50 to 23.00 |

**GRAY FORGE**

| | |
|---|---|
| Valley furnace | 16.50 |
| Pittsburgh district fur. | 17.00 |
| Pittsburgh, delivered | 17.63 to 18.13 |

**CHARCOAL**

| | |
|---|---|
| Lake Superior, del. Chi. | 27.04 |

**SILVERY**

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

**BESSEMER FERROSILICON**

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14—$31; 15—$26; 16—$35.

## Coke

**Prices Per Net Tons**

**Beehive Ovens**

| | |
|---|---|
| Connellsville furnace | $2.50 |
| Connellsville foundry | 3.25 to 4.85 |
| New River foundry | 6.00 |
| Wise county foundry | 4.25 to 5.00 |
| Wise county furnace | 3.50 to 4.25 |

**By-Product Foundry**

| | |
|---|---|
| Newark, N. J., del. | 9.00 to 9.40 |
| Chicago ovens | 8.00 |
| New England, del. | 11.00 |
| St. Louis, del. | 9.00 |
| Birmingham, ovens | 5.00 |
| Indianapolis, del. | 8.25 |
| Ashland, Ky., ovens, Connell., basis | 5.50 |
| Portsmouth, O., ovens, Connell., basis | 5.50 |
| Buffalo, ovens | 8.00 to 8.50 |
| Detroit, ovens | 8.50 |
| Philadelphia, del. | 9.00 |

## Iron Ore

**LAKE SUPERIOR ORE**

**Gross ton, 51½%, Lower Lake Ports**

| | |
|---|---|
| Old range bessemer | $4.80 |
| Mesabi bessemer | 4.65 |
| Old range nonbessemer | 4.65 |
| Mesabi nonbessemer | 4.50 |
| High phosphorus | 4.40 |

**EASTERN LOCAL ORES**

**Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces**

| | |
|---|---|
| Foundry and basic, 56-63%, contract | 10.00 |
| Copper-free low phos. 58-65% | nom. |

**FOREIGN ORE**

**Cents per units, alongside docks Atlantic ports**

| | |
|---|---|
| Foreign manganiferous ore, 45-55% iron, 6-10% manganese | 10.00 |
| North African low phosphorus | 9.00 |
| Swedish basic, 65% | 9.00 |
| Swedish low phos. | 10.00 |
| Spanish, North African basic, 50 to 60% | 9.00 |
| Newfoundland fdy., 55% | 9.00 |
| Tungsten, spot and future short ton unit, duty paid | $11.25 to $11.50 |
| Chrome ore, 48% net ton c.i.f. | $21.50 to 22.00 |

## Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

| | |
|---|---|
| Caucasian, 52-55% (nom.) | 26 to 28 cents |
| South African, 52% | 26 to 28 cents |
| South African, 49-51% | 25 to 26 cents |
| South African, 44-47% | 24 cents |
| Indian, 48-50% | nom. |
| Brazilian, 46-48% (nom.) | 22 cents |

## Refractories

**FIRE CLAY BRICK**

**Per 1000 f.o.b. Works**

**First Quality**

| | |
|---|---|
| Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland | $40.00 |
| Georgia, Alabama | 40.00 |

**Second Quality**

| | |
|---|---|
| Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland | 35.00 |
| Georgia, Alabama | 30.00 to 35.00 |

**SILICA BRICK**

| | |
|---|---|
| Pennsylvania | 40.00 |
| Joliet, Ill., East Chicago, Ind. | 49.00 |
| Birmingham, Ala. | 50.00 to 51.00 |

**MAGNESITE BRICK**

**Per Net Ton**

| | |
|---|---|
| 9 x 4½ x 2½ | $65.00 |

**MAGNESITE**

| | |
|---|---|
| Dead burned grain, net ton, Chester, Pa., or Baltimore bases | 40.00 |
| Domes, Chewelah, Wash., base | 22.00 |

**CHROME BRICK**

| | |
|---|---|
| Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½ | 45.00 |

## Semifinished Steel

**PRICES PER GROSS TON**

**BILLETS AND BLOOMS**

**4 x 4-inch base**

| | |
|---|---|
| Pittsburgh, open-hearth | $30.00 |
| Pittsburgh, bessemer | 30.00 |
| Youngstown | 30.00 |
| Cleveland | 30.00 |
| Philadelphia | 35.30 |
| Chicago | 31.00 |
| Forging, Chicago | 36.00 |
| Forging, Pittsburgh | 36.00 |
| Forging, Philadelphia | 40.30 |

**SHEET BARS**

| | |
|---|---|
| Pittsburgh | 30.00 |
| Youngstown | 30.00 |
| Cleveland | 30.00 |
| Chicago | 31.00 |

**SLABS**

| | |
|---|---|
| Pittsburgh | 30.00 |
| Youngstown | 30.00 |
| Cleveland | 30.00 |

**WIRE RODS**

| | |
|---|---|
| Pittsburgh, Cleveland | 37.00 |
| Chicago | 38.00 |

**SKELP**

| | |
|---|---|
| All grades, Pittsburgh | 1.60c |

## Ferroalloys

**(In dollars, except Ferrochrome)**

| | |
|---|---|
| *Ferromanganese, 78-82%, tidewater, duty paid | $85.00 |
| *Ferromanganese, del. Pittsburgh | 89.79 |
| Spiegeleisen, 19-20%, domestic fur. spot† | 30.00 |
| Ferrosilicon, 50 per cent, freight all., c. l. | 83.50 |
| Do, less carload | 88.50 |
| Do, 75 per cent | 130.00 to 150.00 |
| Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con., del. | 11.00 |
| Do, for spot delivery | 11.50 |
| Ferrotungsten, stand., lb. cont. | 1.10 to 1.15 |
| Ferrovanadium, 30-40 per cent, per lb., contained, on analysis | 3.15 to 3.65 |
| Ferro-carbon-titanium carload producers' plants, net ton | 150.00 |
| Do, one-ton to c. l. | 170.00 |
| Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent) | 91.00 |
| Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24% | 122.50 |

†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

## Fluorspar

**85 and 5 per cent grade**

| | |
|---|---|
| Washed gravel Kentucky and Illinois mines, per net ton | $14.00 to 14.50 |
| Washed gravel, import duty paid east, tide, gross ton | 19.00 |

# For exacting needs

PRACTICALLY all Roebling Flat Wire is custom-made. Our shops handle thousands of flat wire orders yearly—but seldom are any two specifications alike. This is because we specialize in flat wire of highest quality, to meet the distinctive—and usually exacting—needs of each of our customers. ¶ We invite your inquiry regarding our specialized experience of over 40 years, our exceptional manufacturing facilities, and our prices. Roebling Flat Wire is made of cold rolled high or low carbon steel, in various widths, thicknesses and finishes including galvanized and tinned. ¶ We are especially well-equipped to make high carbon flats, tempered or untempered, and in any finish.

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**ROEBLING FLAT WIRE**

# Pig Iron

**Market More Active in Some Districts—Buyers Placing Small Orders—Prices Continue Steady**

PIG IRON PRICES, PAGE 92

**Pittsburgh**—Demand for pig iron shows little further change. March shipments and new orders recorded a fair gain over February, and for some interests exceeded production. Sales usually are in lots of a few hundred tons at a time. One recent exception was the purchase by a consumer of about 1000 tons of foundry iron at $17, base, valley. This same price is quoted on malleable, bessemer and basic, with Pittsburgh furnace prices 50 cents higher. Inquiry is quiet, quarterly buying being almost universally disregarded by buyers.

**Boston**—Pig iron sales in New England dropped to 1200 tons in the past week, the lowest in many weeks. Prices are a shade easier.

**New York**—Pig iron sales are lighter, aggregating about 5000 tons for the past week. Prices of Buffalo iron are unchanged at $15 to $16, furnace, for shipment into this district. Southern iron is $11, furnace, minimum, or $16.50, delivered, New York docks. Reflecting strength of this latter price, a southern producer recently refused an offer of 1000 tons here at the former price of $10.50, Birmingham. Opening of the state barge canal, originally scheduled for about April 6, may be postponed as a result of recent heavy rains. While negotiations are under way between Buffalo pig iron producers and barge companies, few if any contracts on shipments from Buffalo have been consummated. Hence, ideas as to rates on pig iron from Buffalo are rather indefinite. New York Central is inquiring for 150 tons for shipment either to Frankfort, N. Y., or Elkhart, Ind.

**Philadelphia** — Although lacking satisfactory confirmation reports persist that an eastern New York furnace recently sold 40,000 tons of Delaware river pipe iron. The reported price was around $15.25, delivered. The market is quiet. The Norfolk navy yard is inquiring for 270 tons of No. 1X iron. Prices are unchanged.

**Buffalo**—Worthington Pump & Machinery Corp. has closed for 1000 tons of pig iron for its Buffalo plant, with Buffalo producers. Sales generally are slow but inquiry is more active. Prices are steady.

**Youngstown, O.**—Malleable, No. 2 foundry, bessemer and basic iron are all quoted on the same basis of $17, valley furnace. No. 3 foundry and forge iron hold at $16.50, valley. Sales are infrequent. The old stack of the McKeefrey Iron Co. at Leetonia, O., is being dismantled by a Cleveland scrap dealer, this leaving the former Hanna Furnace Co. stack, now operated by Davisoon Coke & Iron Co., the only blast furnace operating at that valley point.

**Cleveland**—Sales increased considerably in the past week. Furnace interests with headquarters at Cleveland booked approximately 23,000 tons, compared with 13,000 tons in the week preceding. The first two weeks in January and in February were fairly active, but business in March remained comparatively quiet until the final week, when the average for the month was brought well up to that of the preceding two months. One lake furnace interest still has 10,000 tons pending on inquiry. A Cleveland furnace recently booked an order for 3000 tons outside this district, the largest single lot in several months. Others seldom exceed 1000 tons. No price changes have been made for second quarter, $17, base, furnace, remaining in effect for delivery in Cleveland, and $16 for shipment outside. The market is $16 to $17, base, lake furnace, in western and southern Ohio and central and eastern Indiana. In northern Indiana and southern Michigan it is $17 to $17.50, base furnace.

**Cincinnati**—Total sales of pig iron during the past week slightly exceeded 2000 tons, with one melter in Ohio closing for 500 tons. Some foundries, especially the automotive, report heavier melt. An Indiana company is inquiring for 500 tons of northern iron, and a Michigan consumer for 1000 tons of malleable.

**Chicago**—March pig iron shipments made a small gain over February's. Sales are smaller following a fair volume of contracting a week ago. Several foundries on automotive work are increasing schedules. Stove foundries are busy and moderate activity is noted in railroad equipment. Farm implement operations are practically down. The price of $17.50, base, Chicago furnace, is not tested by important orders. Southern iron is $17.01, delivered, Chicago, minimum, with silicon extras maintained. Fair shipments of southern iron are noted. Several hundred tons of silvery iron has been closed in Illinois and the Milwaukee district.

**St. Louis**—The melt is increasing slowly and the March rate of shipments was higher than that of September. Currently, however, the market is dull. A consumer here closed for basic iron requirements for second quarter with the St. Louis Gas & Coke Corp., the amount being unstated. Other sales in the past week totaled 2100 tons. Prices are unchanged.

**Birmingham, Ala.**—Sales continue in small lots for early delivery. Prices are slightly firmer. Although $12 to $13 prevails for delivery in this district one maker has advanced to $14. The price for outside delivery is held at $11, base, furnace. Woodward Iron Co. is prepared to relight its third stack.

**Toronto, Ont.**—Increased demand for merchant pig iron for second quarter features business here. The aggregate amount is larger than contracted for first quarter. Spot buying also has improved.

## Ferromanganese Market Quiet; Shipments Steady

Ferroalloy Prices, Page 92

**New York**—Ferromasganese shipments continue at their recent rates. Prices are $85, Pittsburgh, on carloads. Domestic spiegeleisen, 19 to 21 per cent, is easy at $30, furnace. Contract specifications are better, but spot tonnages continue negligible. Hence, the market is largely untested. Foreign spiegeleisen, 26 to 28 per cent, is nominal, no recent sales having been reported. Shipments of special ferroalloys are holding to their improved rate. Prices are firm. Tungsten ore lately has been a little firmer because of business in Europe but the market here remains quiet.

**Pittsburgh**—Specifications for ferroalloys continue quiet and show little change from the rate of recent weeks. The movement of ferromanganese and spiegeleisen is seasonally light but slightly heavier than a month ago. Prices are unchanged with ferromanganese continuing $89.79, delivered, and spiegeleisen $30, furnace, for small lots.

**Chicago**—Shipments of ferroalloys have declined, following active specifications in the first two weeks of March. Prices are unchanged.

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Allis-Chalmers Mfg. Co., Milwaukee, reports unfilled orders Feb. 1 at $12,136,000, a decrease of $866,000 from Jan. 1.

# Scrap

**Buoyancy Is Lacking and Prices Sag Steadily—Melters Take Only Absolute Necessities**

**Chicago**—Bouyancy is lacking in iron and steel scrap, due to sluggish foundry consumption and uncertainty as to sustained steelworks operations. Despite dealer resistance, the downward pressure from most buyers has resulted in a few sharp concessions. Inquiries from some small-lot buyers have improved. Further shipments on relatively high-priced cast borings orders have created a mild stir. The market lacks a definite trend. Melting steel ranges at $9.75 to $10.25. On the Burlington list last week, melting steel sold at $9.75, gross, delivered in the Chicago switching district. Dealers have moderated their bids for railroad scrap.

**Boston**—Conditions have developed no change in the scrap market. Some material continues to go to

# Iron and Steel Scrap Prices

**Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.**

### HEAVY MELTING STEEL

| | |
|---|---|
| Birmingham | 9.50 to 11.00 |
| Boston, dealers | 6.75 to 7.00 |
| Buffalo, No. 1 | 11.00 to 11.50 |
| Buffalo, No. 2 | 9.50 to 9.75 |
| Chicago | 9.75 to 10.25 |
| Cinci., deal. | 9.00 to 9.50 |
| Cleve., No. 1 | 10.00 to 10.50 |
| Cleve., No. 2 | 9.75 to 10.00 |
| Det., No. 1 deal. | 9.00 to 9.25 |
| Det., No. 2 deal. | 7.25 to 7.75 |
| E. Pa. del. mill | 10.00 to 11.00 |
| N. Y. deal. R. R. | 7.00 |
| N. Y. deal. No. 2 | 5.50 |
| N. Y. deal. yd. | 5.00 |
| Pitts., No. 1 | 12.50 to 13.00 |
| St. L. No. 1 sel | 10.00 to 10.50 |
| Federal, Ill. | 8.75 to 9.25 |
| Granite City, Ill. | 8.25 to 8.75 |
| Valleys, No. 1 | 12.00 to 12.50 |

### COMPRESSED SHEETS

| | |
|---|---|
| Buffalo, dealers | 9.50 to 9.75 |
| Chicago | 8.25 to 8.75 |
| Cleveland | 9.00 to 9.25 |
| Detroit, dealers | 9.00 to 9.25 |
| E. Pa. new mat | 9.00 to 10.00 |
| Pittsburgh | 12.50 to 13.00 |
| Valleys | 12.00 |

### BUNDLED SHEETS

| | |
|---|---|
| Buffalo | 7.00 to 7.50 |
| Cinci., deal. | 8.50 to 9.00 |
| Cleveland | 7.00 to 7.25 |
| Eastern Pa. | 8.50 |
| Pittsburgh | 11.50 to 12.00 |
| St. Louis | 5.50 to 6.00 |

### SHEET CLIPPINGS LOOSE

| | |
|---|---|
| Chicago | 5.00 to 5.50 |
| Cincinnati | 5.00 to 5.50 |
| Detroit, dealers | 5.50 to 6.00 |
| St. Louis | 5.50 to 6.00 |

### STEEL RAILS SHORT

| | |
|---|---|
| Birmingham | 12.00 to 12.50 |
| Boston, dealers | 5.50 to 7.00 |
| Buffalo | 13.75 to 14.25 |
| Chicago (3 ft.) | 11.00 to 11.50 |
| Chicago (2 ft.) | 12.00 to 12.50 |
| Cinci., deal. | 14.25 to 14.75 |
| Detroit, deal. | 12.50 to 13.00 |
| Pitts. (open-hearth, 3 ft and less) | 14.50 to 15.00 |
| St. Louis | 13.00 to 13.50 |

### STOVE PLATE

| | |
|---|---|
| Birmingham | 8.00 to 8.50 |
| Boston, con. | 8.00 to 8.50 |
| Buffalo | 9.50 to 10.00 |
| Chicago, net | 7.75 to 8.25 |
| Cinci., deal. net | 5.25 to 5.75 |
| Det., net, deal. | 6.25 to 6.75 |
| Eastern Pa. | 9.00 to 9.50 |
| N. Y., deal. mill | 4.75 |
| St. Louis | 7.75 to 8.25 |

### COUPLERS, SPRING

| | |
|---|---|
| Buffalo | 13.50 to 14.00 |
| Chicago | 11.50 to 12.00 |
| Eastern Pa. | 16.50 |
| Pittsburgh | 16.00 to 16.50 |
| St. Louis | 10.00 to 10.50 |

### ANGLE BARS—STEEL

| | |
|---|---|
| Chicago | 11.00 to 11.50 |
| St. Louis | 8.50 to 9.00 |

### LOW PHOSPHORUS

| | |
|---|---|
| Buff., billets and bloom crops | 15.00 to 15.50 |
| Cleveland bil. and bloom crops | 14.50 to 15.00 |
| Eastern Pa. | 17.00 |
| Pittsburgh billet bloom crops | 17.50 to 18.50 |
| Pitts. sheet bar crops | 16.50 to 17.00 |

### FROGS, SWITCHES

| | |
|---|---|
| Chicago | 10.50 to 11.00 |
| St. Louis | 9.50 to 10.00 |

### SHOVELING STEEL

| | |
|---|---|
| Chicago | 9.75 to 10.25 |
| Cleveland | 7.00 to 7.50 |
| St. Louis | 8.75 to 9.25 |

### RAILROAD WROUGHT

| | |
|---|---|
| Birmingham | 9.00 to 9.50 |
| Boston, dealers | 8.00 to 8.50 |
| Buffalo, No. 1 | 8.50 to 9.00 |
| Buffalo, No. 2 | 11.00 to 11.50 |
| Chicago, No. 1 | 9.00 to 9.50 |
| Chicago, No. 2 | 9.75 to 10.25 |
| Cinci., No. 2 | 9.00 to 9.50 |
| Eastern Pa. | 11.00 |
| N. Y., No. 1 deal. | 10.00 to 10.50 |
| Pitts., No. 2 | 12.50 to 13.00 |
| St. Louis, No. 1 | 7.00 to 7.50 |
| St. Louis, No. 2 | 8.75 to 9.25 |

### SPECIFICATION PIPE

| | |
|---|---|
| Boston | 6.50 to 7.00 |
| Eastern Pa. | 11.50 to 12.00 |
| N. Y., deal. | 7.25 to 7.50 |

### BUSHELING

| | |
|---|---|
| Buffalo, No. 1 | 9.50 to 9.75 |
| Chicago, No. 1 | 8.00 to 8.50 |
| Cinn., No. 1 dl. | 7.50 to 8.00 |
| Cinn., No. 2 | 4.50 to 5.00 |
| Cleve., No. 2 | 7.00 to 7.50 |
| Det., No. 1 new deal. | 8.00 to 8.50 |
| St. L., No. 1 | 6.00 to 6.50 |
| Val. new No. 1 | 11.00 to 11.50 |

### MACHINE TURNINGS

| | |
|---|---|
| Birmingham | 7.00 to 7.50 |
| Boston, dealers | 2.00 to 2.50 |
| Buffalo | 6.00 to 6.50 |
| Chicago | 4.25 to 4.75 |
| Cinn., deal. | 4.50 to 5.00 |
| Cleveland | 4.50 to 5.00 |
| Detroit | 4.00 to 4.50 |
| Eastern Pa. | 7.00 to 7.50 |
| N. Y., deal. | 3.00 |
| Pittsburgh | 8.00 to 8.50 |
| St. Louis | 4.00 to 4.50 |
| Valleys | 8.50 to 8.75 |

### BORINGS AND TURNINGS
**For Blast Furnace Use**

| | |
|---|---|
| Boston | 2.00 to 2.60 |
| Buffalo | 6.75 to 7.25 |
| Cinn., deal. | 4.50 to 5.00 |
| Cleveland | 7.00 to 7.50 |
| Detroit, deal. | 4.75 to 5.25 |
| Eastern Pa. | 6.00 to 7.00 |
| N. Y., deal. | 3.00 |
| Pittsburgh | 8.00 to 8.50 |

### CAST IRON BORINGS

| | |
|---|---|
| Birming., chem. | 12.50 to 13.00 |
| Birming., plain | 7.00 to 7.50 |
| Boston, chem. | 9.10 to 9.60 |
| Boston, deal. | 2.00 to 2.50 |
| Buffalo | 6.75 to 7.25 |
| Chicago | 4.75 to 5.25 |
| Cinn., deal. | 4.50 to 5.00 |
| Cleveland | 7.00 to 7.50 |
| Detroit, deal. | 4.75 to 5.25 |
| Eastern Pa. | 7.00 to 7.50 |
| E. Pa., chem. | 13.50 to 14.50 |
| N. Y., deal. | 3.50 |
| Pittsburgh | 8.00 to 8.50 |
| St. Louis | 5.50 to 6.00 |

### PIPE AND FLUES

| | |
|---|---|
| Cinn., deal. | 7.50 to 8.00 |

### RAILROAD GRATE BARS

| | |
|---|---|
| Buffalo | 7.25 to 7.75 |
| Chicago, net | 7.00 to 7.75 |
| Cincinnati | 7.00 to 7.50 |
| Eastern Pa. | 9.00 to 9.50 |
| N. Y., deal. | 6.00 |
| St. Louis | 7.00 to 7.50 |

### FORGE FLASHINGS

| | |
|---|---|
| Boston, deal. | 5.50 to 6.10 |
| Buffalo | 9.00 to 9.50 |
| Cleve. ov. 10 in. | 8.00 to 8.50 |
| Detroit | 7.75 to 8.25 |

### FORGE SCRAP

| | |
|---|---|
| Boston, del. | 5.10 to 5.60 |
| Chicago | 12.50 to 13.00 |
| Eastern Pa. | 10.50 to 11.00 |

### ARCH BARS, TRANSOMS

| | |
|---|---|
| Chicago, net | 10.50 to 11.00 |
| St. Louis | 11.50 to 12.00 |

### AXLE TURNINGS

| | |
|---|---|
| Boston, deal. | 6.75 to 7.00 |
| Buffalo | 9.50 to 10.00 |
| Chi., steelworks | 8.00 to 8.50 |
| Cleveland | 8.00 to 8.50 |
| Eastern Pa. | 11.00 |
| Pittsburgh | 11.50 to 12.00 |
| St. Louis | 7.00 to 7.50 |

### STEEL CAR AXLES

| | |
|---|---|
| Birmingham | 14.00 to 14.50 |
| Boston, ship. pt. | 14.00 to 15.00 |
| Buffalo | 15.50 to 16.00 |
| Chicago | 14.00 to 14.55 |
| Eastern Pa. | 18.50 to 19.50 |
| St. Louis | 13.50 to 14.00 |

### SHAFTING

| | |
|---|---|
| Bos., ship. pt. | 13.00 to 13.50 |
| Chicago | 11.75 to 12.35 |
| N. Y., deal. | 13.00 to 14.00 |
| St. Louis | 12.00 to 12.50 |
| E. Penna. | 18.00 |

### CAR WHEELS

| | |
|---|---|
| Birming., iron | 10.00 to 10.50 |
| Boston, iron | 14.00 to 14.50 |
| Buffalo, iron | 12.00 to 12.50 |
| Buffalo, steel | 13.50 to 14.00 |
| Chicago, iron | 9.75 to 10.25 |
| Chi., roll steel | 12.50 to 13.00 |
| Cincinnati, iron | 10.50 to 11.00 |
| E. Pa. steel | 15.00 to 15.50 |
| E. Pa. iron | 13.50 to 14.00 |
| Pitts., iron | 13.50 to 14.00 |
| Pitts., steel | 16.00 to 16.50 |
| St. Louis, iron | 8.50 to 9.00 |
| St. Louis, steel | 11.75 to 12.25 |

### NO. 1 CAST SCRAP

| | |
|---|---|
| Birmingham | 10.50 to 11.00 |
| Buffalo (mach.) | 11.00 to 11.50 |
| Boston, textile | 9.00 to 9.50 |
| Chicago, mach. | 10.65 to 11.20 |
| Chi., railroad | 9.50 to 10.10 |
| Chicago, agri. | 9.00 to 9.50 |
| Cinn., mach. cup., gross | 13.00 to 13.50 |
| Cleve. cupola | 12.00 to 12.50 |
| Det., net deal. | 8.50 to 9.00 |
| E. Pa. cupola | 13.00 |
| N. Y. cup deal. | 8.00 to 8.50 |
| N. Y., del. local foundries | 12.00 |
| Pitts., cupola | 12.50 to 13.00 |
| San Fran., del. | 13.50 to 14.00 |
| Seattle | 8.50 to 9.00 |
| St. L. No. 1 ma | 9.00 to 9.50 |
| St. L. No. 1 | 8.50 to 9.00 |

### HEAVY CAST

| | |
|---|---|
| Boston | 10.50 to 11.00 |
| Bos. mach. cast | 11.50 to 12.50 |
| Buffalo, break | 8.00 to 8.50 |
| Cleve., break | 6.50 to 7.00 |
| Detroit, auto, net deal. | 10.50 to 11.00 |
| Det., break., dl. | 6.50 to 7.00 |
| Eastern Pa. | 11.00 |
| N. Y. No. 1 dl. | 8.00 to 8.50 |
| N. Y. break. dl. | 7.00 to 7.50 |
| Pittsburgh | 9.50 to 10.00 |

### MALLEABLE

| | |
|---|---|
| Boston R. R. | 13.00 to 13.50 |
| Buffalo | 12.00 to 12.50 |
| Chicago, agri. | 10.50 to 11.00 |
| Chicago, R. R. | 11.75 to 12.25 |
| Cinn., R. R. dl. | 11.50 to 12.00 |
| Cinn, agri., dl. | 12.00 to 12.50 |
| Cleveland, rail | 12.00 to 12.50 |
| Det. auto deal. | 11.00 to 11.50 |
| St. Louis, rail | 9.50 to 10.00 |

### RAILS FOR ROLLING
**5 feet and over**

| | |
|---|---|
| Birmingham | 10.75 to 11.25 |
| Boston | 8.50 to 9.00 |
| Buffalo | 11.00 to 11.50 |
| Chicago | 12.00 to 12.50 |
| Eastern Pa. | 13.00 to 13.50 |
| New York | 9.00 to 9.50 |
| St. Louis | 10.25 to 10.75 |

### LOCOMOTIVE TIRES

| | |
|---|---|
| Chicago, cut | 12.50 to 13.00 |
| St. L. No. 1 | 11.00 to 11.50 |

### LOW PHOS. PUNCHINGS

| | |
|---|---|
| Chicago | 11.25 to 11.75 |
| Buffalo | 14.00 to 14.50 |
| Eastern Pa. | 15.50 to 16.50 |
| Pittsburgh | 15.50 to 16.00 |

# ANNOUNCING . . .

# GRASSELLI INHIBITOR

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Pennsylvania and to the Worcester consumer but this has dwindled. There is no business to test prices.

**New York**—J. H. Wallin Co., Phillipsburg, Pa., has purchased 900 tons of 60-pound rails, mostly relayers, from the Northampton Transit Co., Easton, Pa. Bids were opened on this material last week. Copper, poles and other material were sold to the Associated Gas and Electric System, Easton, Pa.

Scrap buying is listless, eastern mills generally adhering to taking shipments close to requirements. Most mills are well covered. Heavy melting steel is unchanged at $10.50, delivered eastern Pennsylvania, with Bethlehem reported paying $10. Dealers' buying prices are unchanged and stocks with some yards are fairly heavy, although accumulation of most grades is gradual.

**Philadelphia**—Steel and iron scrap is lifeless and prices on steel grades are low as at any time in 25 years. Except for the Phoenixville, Pa., consumer leading buyers are inactive. Large interests are still refusing shipments. The New York Shipbuilding Co. has opened bids on 2800 tons of miscellaneous scrap at its yards.

**Buffalo**—Two consumers are said to have purchased 4000 to 5000 tons of machine shop turnings at Detroit for delivery here. Figured on an all-rail basis the price is said to have meant $8.80 a ton, delivered here. Local quotations have been much lower and dealers are at loss to understand the transactions, reports of which apparently are well founded.

**Pittsburgh**—Prices of steel and iron scrap are unchanged on the basis of recent light buying. Heavy melting steel and compressed sheets are quiet and melters are not interested in buying. Pending railroad lists contribute to current dullness.

**Cleveland**—Iron and steel scrap activity continues restricted. A leading independent steel interest is not expected to resume shipments of heavy melting steel before April 15 and possibly not until May 1. Another remains out of the market. Blast furnace scrap is moving slowly but at unchanged quotations. Foundry activity shows little expansion. The Warren, O., consumer is taking material in slightly better volume this week. Some compressed sheets are moving to Weirton at $12.25, delivered, as are machine shop turnings to Youngstown, at around $7.50. Yard stocks continue to grow slowly. Volume of scrap coming out, however, is moderate.

**Detroit**—Hesitancy is manifest in the attitude of scrap consumers and the market shows no change in prices, while demand lacks strength.

**Cincinnati**—Dealers' buying prices are unchanged as the iron and steel scrap market remains featureless. Mills are taking material on contract, but releases are limited.

**St. Louis**—With railroads continuing to pour tonnages on the market and melters purchasing scantily, iron and steel scrap exhibits further weakness. Price cuts were made on some items not lately disturbed. The only transaction of importance reported in several weeks was the sale of 3600 to 4000 tons of steel to an east side mill for delivery in second quarter. The price was not definitely stated, but it is understood to be the lowest figure done on similar material since before the war.

**Birmingham, Ala.**—Shipments of steel and iron scrap do not aggregate a large tonnage and the market appears quiet and prices weak. Heavy melting steel still holds the favored position at $11 on best quality.

**Toronto, Ont.**—While Hamilton mills are again taking supplies of steel scrap, the general market for heavy melting steel and turnings is still dull. Specifications are strict. Improvement is mostly due to heavy buying of machinery cast by foundries, although there has been a better demand lately for malleable and stove plate. Dealers are still out of the market.

## Canadian Scrap

**Dealers' Buying Prices**

**MONTREAL**

**Per Gross Ton**

| | |
|---|---|
| Iron axles | $11.00 |
| Steel axles | 10.00 |
| Car wheels | 8.00 |
| Stove plate | 8.00 |
| Wrought pipe | 2.00 |
| Turnings | 2.00 |
| Heavy melting steel | 6.00 |

**TORONTO**

| | |
|---|---|
| Steel axles | 7.00 |
| Iron axles | 7.00 |
| Heavy melting steel | 7.00 |
| Turnings | 2.00 |
| No. 1 mach. cast (net) | 9.00 |
| Malleable (net) | 7.00 |

## More Tin in Tin Plate

New York—In 1930 the consumption of tin in the manufacture of tin plate was 26,151 gross tons, compared with 27,681 tons in 1929, the record year. Consumption of tin per ton of tin plate manufactured in 1930 was 35.419 pounds, compared with 34.448 pounds in 1929. The postwar record use of tin was 38.834 pounds in 1922.

# Coke

**Consumers Slow in Contracting for Second Quarter—Foundry Shipments Are Steady**

COKE PRICES, PAGE 92

**Pittsburgh**—Beehive coke for metalurgical purposes is in unchanged demand. Sales of domestic and industrial heating coke show the usual seasonal quietness. New contracting for the furnace grade is lacking, and the spot market is slow. Furnace coke generally is $2.50. Foundry requirements are steady at unchanged prices.

**Boston**—Producers of by-product foundry coke have reaffirmed first quarter prices for the next three months. The melt of iron is comparatively light and consumers are taking their time in placing orders for coke.

**New York**—Inquiry for coke continues sluggish. Prices are easy at $2.50 to $2.65, Connellsville, Pa., for beehive furnace coke, and $3.50 to $3.75 for standard grades of beehive foundry coke. These prices are subject to occasional concession. Premium brands of beehive foundry coke are $4.70 to $4.75, Latrobe, Pa., by-product foundry coke is $9 to $9.40, Newark, N. J.; $11, New England; and $9, Philadelphia. By-product furnace coke is about $1.50 less.

**Cincinnati** — Domestic grades of by-product foundry coke, except pea, were reduced $1 a ton to $5, April 1. Pea is $3.50. Foundry grades remain $9, delivered, Cincinnati.

**St. Louis**—Shipments of metallurgical coke in the first three weeks of March were equal to the entire amount for all of February. Buying continues on a hand-to-mouth basis. Prices are steady.

**Birmingham, Ala.**—Local consumers are buying only for early requirements. Of 1930 by-product coke ovens in this district 922 are producing.

# Pacific Coast

**Decreased Activity Noted but Fair Tonnages Move in California—Spring Buying in Northwest Is Late—Public Works Give Largest Tonnages—Pipe Needs Show Some Decline**

**San Francisco**—(*By Air Mail*)—Movement of steel products on the Pacific Coast continues well sustained, although inquiries are few. Activity in Southern California has decreased. Important bookings included 800 tons of structural shapes and 4500 tons of plates for two Los Angeles projects and the award of several bridges for the Western Pacific Co., San Francisco, involving 925 tons, to three fabricators in the bay district.

### Bars, Plates and Shapes

Demand for reinforcing steel is holding up well, primarily due to state bridge and highway projects. Bookings this week were the second largest of the year and aggregated 1787 tons, bringing the total for the year to 14,464 tons, compared with 10,618 tons for the corresponding period in 1930. Among larger lots placed were 200 tons for a library in Los Angeles and 200 tons for highway work in Imperial county, Calif., both secured by unnamed companies. The largest pending project involves 4000 tons for the Sixth street bridge, Los Angeles, bids on which open April 29.

Plate bookings totaled 5690 tons and brought the aggregate for the year to 61,944 tons, compared with 14,809 tons for the same period last year. The Steel Tank & Pipe Co. took 880 tons for a 30-inch welded steel pipe line for Oakland. Los Angeles placed 1500 tons and 3000 tons, respectively, with the Consolidated Steel Corp., and the Western Pipe & Steel Co. for a 24 to 36-inch welded steel pipe line. Quotations remain unchanged at 2.00c to 2.05c, c.i.f.

Demand for structural shapes is holding up well and awards aggregated 3384 tons. The total for the year is now 33,981 tons, compared with 22,962 tons for the corresponding period in 1930. The Western Pacific Co. placed 500 tons for bridges with the Columbia Steel Co., 300 tons with McClintic-Marshall Corp. and 125 tons with the Virginia Bridge & Iron Co. Judson-Pacific Co. took 30 tons for a church addition in San Francisco and the Consolidated Steel Corp. secured 800 tons for a library for the University of Southern California, Los Angeles. Bids have been opened on 320 tons for Pier No. 15, San Francisco. Bids will be opened April 29 on 1200 tons for the Sixth street bridge, Los Angeles. Prices continue to range from 2.05c to 2.15c, c.i.f., on plain shapes.

### Other Finished Material

Activity in cast iron pipe has quieted and only one award of note was reported. The United States Pipe & Foundry Co. took 787 tons for Bellingham, Wash. So far this year 22,323 tons have been booked, compared with 26,831 tons for the same period a year ago. Bids have been opened on 136 tons for the national guard training camp near San Luis Obispo, Calif. Glendora, Calif., will open bids March 31 for 235 tons.

Demand for sheets has shown some improvement but most of the business is confined to carload lots and less. Blue annealed No. 10 gage is quoted at 2.50c, c.i.f., black sheets No. 24 gage at 3.00c and No. 24 gage galzanized sheets at 3.50c, c.i.f.

## Coast Pig Iron Prices

| | |
|---|---|
| Utah basic | $22 00 to 24.00 |
| Utah foundry | 22.00 to 24.00 |
| *German | 24.25 |
| *Indian | 22.00 to 24.00 |

*C.i.f. duty paid.

## Northwest Is Inactive

**Seattle**—Conditions in iron and steel markets of the Pacific Northwest show little change. Spring buying is late but there has been recent increase in tonnages handled although small lots are the rule. Prices are unchanged.

Mountain Lakes Water Co., sponsored by Ulen & Co., New York, has engineers in the field surveying suburban territory between Seattle and Everett, a distance of 30 miles, preparatory to beginning construction of an important water system on which $750,000 will be spent this year. Plans include a 500,000-gallon steel storage tank, reservoir and extensive system of water mains. Vancouver, B. C., this week, placed orders for nearly 1900 tons of pipe with foreign manufacturers through local agencies.

Inactivity in building is reflected in poor demand for concrete bars, local steel mills reporting business unusually quiet. Few specifications are up for figures and no important projects have developed. Recent awards locally have been in car lots. An unnamed interest has booked 500 tons for the Gold Beach bridge, Rogue river, Oreg., general contract to Mercer-Fraser Co.

No awards over 100 tons for shapes were reported placed this week, although several large buildings proposed at Portland, Oreg., will call for considerable tonnage. Local fabricating plants have booked a number of small orders, which average probably 1000 to 2000 tons a month. Isaacson Iron Works, Seattle, has the contract for a small tonnage for the Kitsap County court house and Wallace Bridge & Structural Steel Co., Seattle, will furnish a small lot for a building for the University of Washington. Clallam County, Wash., will receive bids April 7 for a 100-foot steel span to cross the lower Hoko river.

### Pipe Market Is Active

Contracts for furnishing 918 tons of cast iron and 200 tons of steel pipe have been awarded by Vancouver, B. C., while Edmonds, B. C., has announced contracts for 765 tons of cast iron for the Burnaby project. All this material will be furnished by foreign manufacturers. Gordon & Belyea Ltd. will supply 688 tons of 12-inch pipe made by the Staveley Coal & Iron Co., England; Evans, Coleman & Evans have the contract for 230 tons of 12-inch Delavaud, made by National Iron Corp., England, while Leith, Murray & Co. Ltd., representing Tube de la Saar, France, will supply 5000 feet of 12-inch steel pipe, about 200 tons. The Edmonds job was awarded Evans, Coleman & Evans involving 57,230 feet of 4, 6, and 8-inch cast iron manufactured by Stanton Iron Works of England. A small order, about 65 tons of 6-inch cast iron for Tacoma, was given to French interests. Seattle will open bids April 3 for 900 tons of 20 and 24-inch for the West Seattle project. Wenatchee, Wash., is in the market for slightly less than 100 tons of 8-inch, bids April 6. Olympia, Wash., received tenders March 31 for a two and a half million gallon capacity concrete reservoir with pipe and fittings. Final contracts for the Grants Pass, Oreg., water system have been awarded through Baar & Cunningham, Portland engineers. These units include the filter plant, pump installation and equipment.

# Steel, Wrought and Cast Iron Pipe, and Tubing

## Welded Iron, Steel Pipe

**Base Price $200 Ton**

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought iron pipe, Pittsburgh base.

**BUTT WELD**

| | Steel | | | Iron | |
|---|---|---|---|---|---|
| In. | Blk. | Gal. | In. | Blk | Gal. |
| ½ | 58 | 44½ | ½ | 23 | 5 |
| ¾ | 62 | 50½ | ¾ | 28 | 11 |
| 1—3 | 64 | 52½ | 1 and 1¼ | 31 | 15 |
| | | | 1½ and 2 | 35 | 18 |

**LAP WELD**

| | | | | | |
|---|---|---|---|---|---|
| 2 | 57 | 45½ | 2 | 23 | 9 |
| 2½—6 | 61 | 49½ | 2½—3½ | 28 | 13 |
| 7—8 | 58 | 45½ | 4—6 | 30 | 17 |
| 9—10 | 56 | 43½ | 7 and 8 | 29 | 16 |
| 11—12 | 55 | 42½ | 9—12 | 26 | 11 |

**BUTT WELD**

*Extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| ½ | 55 | 44½ | ¼ & ⅜ | +13 | +48 |
| ¾ | 60 | 49½ | ½ | 23 | 7 |
| 1—1½ | 62 | 51½ | ¾ | 28 | 12 |
| 2—3 | 63 | 52½ | 1—2 | 34 | 18 |

**LAP WELD**

*Extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 55 | 44½ | 2 | 29 | 13 |
| 2½—4 | 59 | 48½ | 2½—4 | 34 | 20 |
| 4½—6 | 58 | 47½ | 4½—6 | 33 | 19 |
| 7—8 | 54 | 41½ | 7 and 8 | 31 | 17 |
| 9—10 | 47 | 34½ | 9—12 | 21 | 8 |
| 11—12 | 46 | 33½ | | | |

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

**BOILER TUBES**

| Carload Discounts, Lap Welded Steel | | f.o.b. Pittsburgh Charcoal Iron | |
|---|---|---|---|
| 2—2¼ | 38 | 1¾ | 8 |
| 2½—2¾ | 46 | 2—2¼ | 13 |
| 3 | 52 | 2½—2¾ | 16 |
| 3¼—3¾ | 54 | 3 | 17 |
| 4 | 57 | 3¼—3½ | 18 |
| 4½—6 | 46 | 4 | 20 |
| 1½ | 1 | 4½ | 21 |

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

**STANDARD COMMERCIAL SEAMLESS BOILER TUBES**

**COLD DRAWN**

| | | | |
|---|---|---|---|
| 1 | 61 | 3 | 46 |
| 1¼—1½ | 53 | 3¼—3½ | 48 |
| 1¾ | 37 | 4 | 51 |
| 2—2¼ | 32 | 4½, 5, 6 | 40 |
| 2½—2¾ | 40 | | |

**HOT ROLLED**

| | | | |
|---|---|---|---|
| 2—2¼ | 38 | 3¼—3½ | 54 |
| 2½—2¾ | 46 | 4 | 57 |
| 3 | 52 | 4½, 5, 6 | 46 |

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Tubing

**Cold drawn; f.o.b. mill**

Random lengths over 5 ft. .....55%
Selected lengths, 1 to 18 ft. .....53%

## Cast Iron Water Pipe

**Class B Pipe—Per Net Ton**

Six-inch and over, Bir. ....$35.00 to 36.00
Four-inch, Birmingham .... 39.00 to 40.00
Four-inch, Chicago ..... 46.20 to 48.20
Six to 24-inch, Chicago..... 42.20 to 44.20
Six-inch and over, N. Y..... 37.50 to 39.50
Four-inch, New York..... 40.50 to 41.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

## Warehouse Quotations at Leading Centers, in Cents Per Pound

**STEEL BARS**

| | |
|---|---|
| Baltimore ..... | 3.00c |
| Boston ..... | 3.265c |
| Buffalo ..... | 3.15c |
| Chattanooga.. | 3.10c |
| Chicago ..... | 2.90c |
| Cincinnati .... | 3.15c |
| Cleveland ..... | 2.85c |
| Detroit ..... | 3.00c |
| Houston ..... | 3.00c |
| Los Ang. .... | 3.40c |
| New York‡(d) | 3.10c |
| Philadelphia.. | 2.60c |
| Pittsburgh .... | 2.75c |
| Portland ..... | 3.15c |
| San Frans..... | 2.40c |
| Seattle ..... | 3.15c |
| St. Louis ..... | 3.15c |
| St. Paul ..... | 3.00c |
| Tulsa ..... | 3.65c |

**IRON BARS**

| | |
|---|---|
| Baltimore .... | 3.25c |
| Boston ..... | 3.265c |
| Buffalo ..... | 3.15c |
| Chattanooga.. | 3.10c |
| Chicago ..... | 3.00c |
| Cincinnati .... | 3.15c |
| Detroit ..... | 3.00c |
| New York‡(d) | 3.10c |
| Philadelphia.. | 2.60c |
| St. Louis ..... | 3.15c |
| Tulsa ..... | 3.65c |

**REINFORC. BARS**

| | |
|---|---|
| Baltimore....2.50c- | 3.31c |
| Boston ..... | 3.265c |
| Buffalo ..... | 2.95c |
| Chattanooga.. | 3.10c |
| Cincinnati .... | 3.15c |
| Cleveland ..2.25c- | 2.44c |
| Detroit ..... | 3.00c |
| Houston ..... | 3.00c |
| Los Ang. cl.... | 2.40c |
| Los Ang. lcl.. | 2.70c |
| New York..2.65c- | 3.10c |
| Phila. .....2.40c- | 3.00c |
| Pittsburgh .... | 2.75c |
| San Fran. cl. | 2.30c |
| San Fran. lcl. | 2.50c |
| Seattle ..... | 3.15c |
| St. Louis ..... | 3.15c |
| Tulsa ..... | 3.65c |
| Young. .....2.30c- | 2.60c |

**SHAPES**

| | |
|---|---|
| Baltimore .... | 3.00c |
| Boston ..... | 3.365c |
| Buffalo ..... | 3.25c |
| Chattanooga.. | 3.20c |
| Chicago ..... | 3.00c |
| Cincinnati .... | 3.25c |
| Cleveland ..... | 2.95c |
| Detroit ..... | 3.10c |
| Houston ..... | 3.25c |
| Los Ang. .... | 3.40c |
| New York(d) | 3.10c |
| Philadelphia.. | 2.50c |
| Pittsburgh .... | 2.85c |
| Portland ..... | 3.15c |
| San Fran. .... | 2.40c |
| Seattle ..... | 3.15c |
| St. Louis ..... | 3.25c |
| St. Paul ..... | 3.10c |
| Tulsa ..... | 3.75c |

**PLATES**

| | |
|---|---|
| Baltimore .... | 3.00c |
| Boston ..... | 3.365c |
| Buffalo ..... | 3.25c |
| Chattanooga.. | 3.20c |
| Chicago ..... | 3.00c |
| Cincinnati .... | 3.25c |
| Cleveland, ¼-in. and thicker ..... | 2.95c |
| Clev., 3/16-in. | 3.20c |
| Detroit ..... | 3.10c |
| Det., 3/16-in. | 3.10c |
| Houston ..... | 3.00c |
| Los Angeles.. | 3.40c |
| New York(d) | 3.30c |
| Philadelphia.. | 2.50c |
| Phila. floor.... | 5.10c |
| Pittsburgh .... | 2.85c |
| Portland ..... | 3.15c |
| San Fran. .... | 2.40c |
| Seattle ..... | 3.15c |
| St. Louis ..... | 3.25c |
| St. Paul ..... | 3.10c |
| Tulsa ..... | 2.75c |

**NO. 10 BLUE**

| | |
|---|---|
| Baltimore ..... | 3.25c |
| Boston ..... | 3.915c |
| Buffalo ..... | 3.50c |
| Chattanooga.. | 3.60c |
| Chicago ..... | 3.35c |
| Cincinnati .... | 3.45c |
| Cleveland ..... | 3.10c |
| Detroit ..... | 3.35c |
| Houston ..... | 3.90c |
| Los Ang. ..... | 3.95c |
| N. Y. (d)....3.00c- | 3.40c |
| Portland ..... | 4.00c |
| Phila.*† ..... | 3.05c |
| Pitts.** ..... | 3.10c |
| San Fran. .... | 3.65c |
| Seattle ..... | 4.00c |
| St. Louis .... | 3.45c |
| St. Paul ..... | 3.40c |
| Tulsa ..... | 3.95c |

**NO. 24 BLACK**

| | |
|---|---|
| Balt.*† ..... | 3.50c |
| Boston ..... | 4.70c |
| Buffalo ..... | 4.20c |
| Chicago ..... | 3.80c |
| Cincinnati .... | 3.90c |
| Clev.*** ..... | 3.75c |
| Detroit ..... | 3.75c |
| Los Ang. .... | 4.70c |
| New York..3.50c- | 3.65c |
| Phila.*† ..... | 3.60c |
| Pitts.** ..... | 3.40c |
| Portland ..... | 4.50c |
| San Fran. .... | 4.15c |
| Seattle ..... | 4.50c |
| St. Louis ..... | 3.95c |
| St. Paul ..... | 3.545c |
| Tulsa ..... | 4.10c |

**NO. 24 GAL. SHEETS**

| | |
|---|---|
| Balt.*† ..... | 4.00c |
| Boston ..... | 5.45c |
| Buffalo .....4.40c- | 4.60c |
| Chicago (local del.) | 4.35c |
| Chicago (outside) | 4.35c-4.60c |
| Cincinnati .... | 4.40c |
| Cleveland ..... | 4.00c |
| Detroit ..... | 4.25c |
| Houston ..... | 5.40c |
| Los Ang. .... | 5.10c |
| New York....4.00c- | 4.10c |
| Phila.*† ..... | 4.15c |
| Pitts.** ..... | 4.00c |
| Portland ..... | 5.00c |
| San Fran. .... | 4.65c |
| Seattle ..... | 5.00c |
| St. Louis ..... | 4.40c |
| St. Paul ..... | 4.23c |
| Tulsa .....4.60c- | 4.75c |

**BANDS**

| | |
|---|---|
| Baltimore .... | 3.50c |
| Boston .....4.015c- | 5.00c |
| Buffalo ..... | 3.50c |
| Chattanooga.. | 3.30c |
| Chicago ..... | 3.10c |
| Cincinnati .... | 3.35c |
| Cleveland ..... | 3.10c |
| Det. 3/16-in. & lighter.... | 3.30c |
| Houston ..... | 3.65c |
| Los Ang. ..... | 4.30c |
| New York(d) | 3.40c |
| Philadelphia.. | 2.90c |
| Pittsburgh .... | 3.10c |
| Portland ..... | 3.50c |
| San Fran. .... | 3.75c |
| Seattle ..... | 4.15c |
| St. Paul ..... | 3.75c |
| Tulsa ..... | 3.85c |

**HOOPS**

| | |
|---|---|
| Baltimore .... | 3.50c |
| Boston .....5.50c- | 6.00c |
| Buffalo ..... | 3.90c |
| Chicago ..... | 3.65c |
| Cincinnati .... | 3.90c |
| Cleveland ..... | 3.65c |
| Det. No. 14 & lighter .. | 3.80c |
| New York .... | 3.75c |
| Philadelphia.. | 3.15c |
| Pittsburgh .... | 4.10c |
| Seattle ..... | 5.15c |
| St. Paul ..... | 3.75c |

**COLD FIN. STEEL**

**Rounds & Hexagons**

| | |
|---|---|
| Baltimore (c) | 3.30c |
| Boston ..... | 3.50c |
| Buffalo ..... | 3.15c |
| Chattanooga* | 3.85c |
| Chicago ..... | 3.35c |
| Cincinnati .... | 3.80c |
| Cleveland ..... | 3.40c |
| Detroit ..... | 3.65c |
| Los Ang. (a) | 4.50c |
| New York .... | 3.40c |
| Philadelphia* | 3.40c |
| Pittsburgh .... | 3.35c |
| Portland (a) | 4.50c |
| San Fran.(a) | 4.25c |
| Seattle (a).... | 4.75c |
| St. Paul (a).. | 3.85c |
| St. Louis ..... | 3.60c |
| Tulsa ..... | 4.75c |

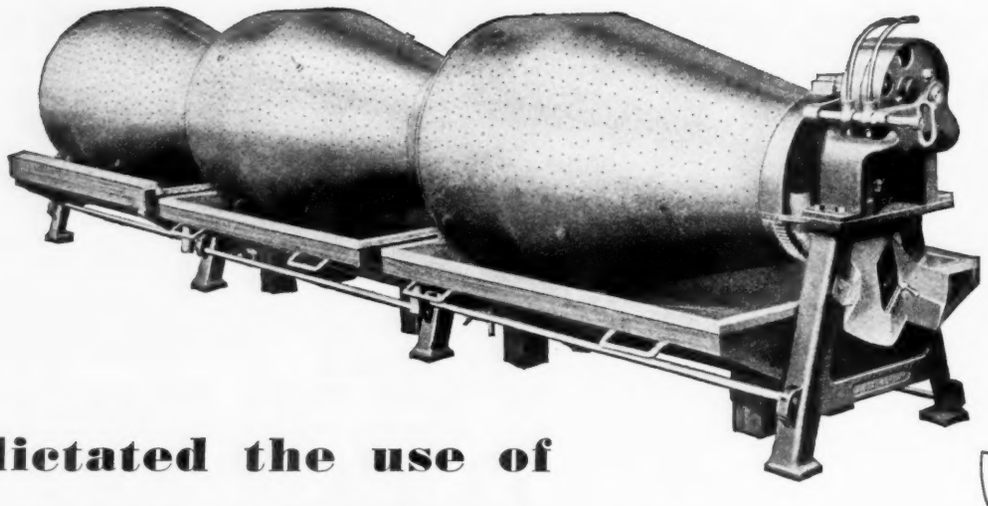
Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

**COLD ROLL. STRIP**

| | |
|---|---|
| Boston 0.100 in., 500 lb. lots ..... | 5.30c |
| Buffalo ..... | 5.65c |
| Chicago (soft) (b).. | 6.15c |
| Cincinnati .... | 6.10c |
| Clev. (b) ..... | 5.95c |
| Detroit ..... | 5.40c |
| Phila. (c)..... | 4.85c |
| New York .... | 5.05c |

(b)Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d)Minus quant. diff.
‡Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.

# GERMAN THOROUGHNESS . . .



Rotary Monel Metal pickling machine for pickling brass stampings and forgings in 10% sulphuric acid bath as made by FRITZ WERNER, Berlin, for the Allgemeine Elektrizitaetsgeselischaft Werk, Annaberg, Germany. These machines have been in service two years without showing any appreciable wear. Rotary type continuous pickling machines are built in the United States by COLT'S PATENT FIRE ARMS MFG. COMPANY, Hartford, Conn.

No. 49

Pickling Equipment that passes the test of service

## . . . dictated the use of

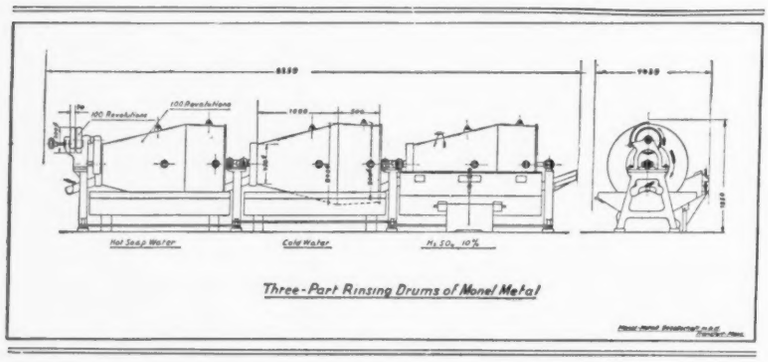
# MONEL METAL

## *in this continuous rotary pickler . . .*

● The German engineers who conceived this ingenious rotary pickling machine were not content to perfect its design and then "call it a day". They went a step further and insured maximum operating efficiency and economy by specifying Monel Metal construction for this piece of equipment.

Their good judgment has been confirmed by this machine's record of two years' severe service without appreciable deterioration. Neither mechanical wear nor the corrosive action of dilute sulphuric acid and soap solutions have impaired the performance of this equipment in any way.

Such records are made possible by Monel Metal's remarkable combination of high corrosion-resistance and steel-like strength. This high Nickel alloy stubbornly combats the attacks of most pickling agents, both acid and alkaline. Its high strength and uniform rolled structure fortifies equipment against hard wear and premature breakdowns . . . insures long periods of uninterrupted, low cost service.




Three-Part Rinsing Drums of Monel Metal

Monel Metal gets most of its desirable properties from its high Nickel content. Remember that strong, tough, durable and acid-resistant Monel Metal insures maximum operating life of pickling equipment and specify this high Nickel alloy when you buy new equipment.

**THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL ST., NEW YORK, N. Y.**

A HIGH NICKEL ALLOY

INCO MONEL METAL

# MONEL METAL

NICKEL ALLOYS PERFORM BETTER LONGER

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

## Mill Products

**Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 10.00c, Conn., for copper**

| | |
|---|---|
| **Sheets** | |
| Yellow brass (high) | 17.25 |
| Copper, hot rolled | 19.87½ |
| Lead, full sheets (cut ½c more) | 8.50 |
| Zinc sheet (100-lb. base) | 9.50 |
| **Tubes and Pipes** | |
| Seamless yellow brass (high) | 22.12½ |
| Seamless copper | 22.37½ |
| **Rods** | |
| Yellow brass (high, full turnings) | 15.50 |
| Naval brass | 16.50 |
| **Anodes** | |
| Copper, untrimmed | 17.37½ |
| **Wire** | |
| Yellow brass (high) | 17.75 |

## Old Metals

**Dealers' buying prices, cents lb.**

| | |
|---|---|
| **Heavy Red Brass** | |
| New York | 6.75 to 7.00 |
| Chicago | 6.25 to 6.75 |
| Cleveland | 7.00 to 7.25 |
| St. Louis | 6.25 to 6.50 |
| **Heavy Yellow Brass** | |
| New York | 4.50 to 4.75 |
| **Heavy Copper and Wire** | |
| New York | 7.50 to 7.75 |
| Boston | 7.25 to 7.50 |
| Chicago | 7.00 to 7.50 |
| Cleveland | 7.00 to 7.25 |
| St. Louis | 6.50 to 7.00 |
| **Red Brass Borings** | |
| New York | 6.25 to 6.50 |
| **Yellow Brass Tubing** | |
| Cleveland | 4.00 to 4.50 |
| **Light Copper** | |
| New York | 6.75 to 7.00 |
| Chicago | 6.25 to 6.50 |
| Cleveland | 6.00 to 6.25 |
| St. Louis | 6.50 |
| **Light Brass** | |
| Boston | 3.50 to 3.75 |
| Chicago | 3.75 to 4.25 |
| Cleveland | 3.25 to 3.50 |
| St. Louis | 3.50 to 3.75 |
| **Zinc** | |
| New York | 1.75 to 2.00 |
| Cleveland | 1.25 to 1.50 |
| St. Louis | 2.00 |
| **Aluminum** | |
| Clippings, soft, Cleveland | 12.00 to 13.00 |
| Clippings, hard, Cleveland | 9.00 to 10.00 |
| Borings, Cleveland | 5.00 to 5.25 |
| Mixed cast, Cleveland | 5.00 to 5.50 |
| Mixed cast, Boston | 4.00 to 4.50 |
| Mixed cast, St. Louis | 4.50 |

## Secondary Metals

| | |
|---|---|
| Remelt aluminum No. 12 | 11.00 to 11.50 |
| Brass ingots, 85-5-5-5 | 9.50 |

# Metals

**Copper and Tin Prices Yield to Dull New Business—Lead and Zinc Quotations Steady**

**New York**—After showing much resistance to quiet new business, nonferrous metal prices have yielded. Weakness is especially evident in copper and tin. Lead and zinc show little change.

Inasmuch as trading was quiet all through March after substantial activity in February, the steadiness of metal prices has been remarkable. New business is light in mill products, also. Shipments improved in February and have held up well this month, but the backlog on which mills now have specifications is light. In many instances, however, the mills still hold large contracts made at low prices sometime ago.

**Copper**—After a brief period of stability, copper began to slip below 10.00c several days ago. At first, shading was on limited resale tonnages, but later this spread to first hands. When the export price first was cut to 10.30c c.i.f., sales increased to several thousand tons a day, but subsequently fell back to a negligible quantity. As domestic business remained extremely light, it was generally accepted in the market as a foregone conclusion that sooner or later the price would break below 10.00c, Connecticut. Consumers here and abroad appear to be well covered on nearby needs.

**Zinc**—After holding steady at 4.00c, East St. Louis, for several weeks, the market slipped five points on nearby deliveries. Consumers remained disinterested. Producers, except in the case of a little tonnage here and there, showed little interest in the market though most of them met competition when their regular customers were in the market.

**Tin**—Consumers have bought little tin for about a month though consumption has improved more than consumption of most metals. Stocks of tin continue to accumulate rapidly in England but change little here. March shipments from the Straits were light. Many users entered the year with larger inventories and forward commitments than usual.

**Lead**—New business has been confined to scattered carlots for prompt shipments but prices have been unchanged.

**Aluminum**—Consumption of aluminum has improved in recent weeks but new orders have been light. Remelt metal of 98 and 99 per cent grade is firmer but No. 12 remains weak.

## Coke By-Products Sales Improve; Prices Steadier

**New York**—Demand for coke by-products has improved slightly. Prices are steadier. A broader buying movement continues for toluol, March being the best month this year for most distributors. Sales of benzol continue to be noted at 10c. Phenol buying has dropped in some quarters. The bulk of phenol is moving at 17c in this market. While a fair spot demand has developed for naphthalene, contract shipments have declined. Some shading of 3.75c for flakes is reported.

## Coke By-Products

| | Spot |
|---|---|
| Per Gallon, Producers' Plants, Tank Lots | |
| Pure benzol | $0.19 to 0.20 |
| 90 per cent benzol | 0.19 to 0.20 |
| Toluol | 0.27 |
| Solvent naphtha | 0.25 |
| Commercial xylol | 0.25 |
| Per Pound at Producers' Plants in 250-Pound Drums | |
| Phenol | 0.16 to 0.17 |
| Per Pound at Producers' Plants | |
| Naphthalene flakes | 3.75 to 4.75 |
| Naphthalene balls | 4.75 to 5.75 |
| Per 100 Pounds Atlantic Seaboard | |
| Sulphate of ammonia | $1.85 to $1.90 |

## Quicksilver Is Steady

**New York**—Quicksilver is steady at $101 to $103 a flask.

## Prices of the Week, Cents a Pound

| | Copper—Electro delivered | Copper—Lake delivered | Copper—Casting refinery | Straits Tin New York Spot | Straits Tin New York Futures | Lead N. Y. | Lead East St. L. | Zinc St. L. | Aluminum 98-99% | Spot Antimony | Ingot Nickel |
|---|---|---|---|---|---|---|---|---|---|---|---|
| March 25 | 10.00 | 10.12½ | 9.75 | 27.10 | 27.40 | 4.50 | 4.25 | 3.97½ | 22.90 | 7.05 | 35.00 |
| March 26 | 10.00 | 10.12½ | 9.75 | 26.97½ | 27.25 | 4.50 | 4.25 | 3.97½ | 22.90 | 7.02½ | 35.00 |
| March 27 | 10.00 | 10.12½ | 9.75 | 26.70 | 26.95 | 4.50 | 4.25 | 3.95 | 22.90 | 7.00 | 35.00 |
| March 28 | 9.75 | 10.12½ | 9.75 | 26.62½ | 26.87½ | 4.50 | 4.25 | 3.95 | 22.90 | 7.00 | 35.00 |
| March 30 | 9.75 | 10.12½ | 9.62½ | 26.50 | 26.75 | 4.50 | 4.25 | 3.95 | 22.90 | 7.00 | 35.00 |
| March 31 | 9.75 | 10.00 | 9.50 | 26.75 | 27.00 | 4.50 | 4.25 | 3.95 | 22.90 | 7.00 | 35.00 |

# Europe

**Soviet Buys Machine Tools and Tin Plate in Britain; Entente Agrees on Exports**

**London**—(*By Cable*)—Orders for machine tools valued at £400,000 ($1,944,000) have been closed by the Russian soviet with British builders. The soviet also has placed a heavy order for British tin plate.

Iron and steel exports from Middlesbrough in March were considerably higher than in February. Heavy cargoes, mainly rails, were shipped to South Africa. British railroads are buying rails and accessories. Dorman, Long & Co. have been awarded a contract for a bridge over the River Tees, England, the cost estimated at £436,000 ($2,118,960). Steel demand in the Midland is stagnant. Middlesbrough hematite is firmer; sales to Italy are noted.

STEEL's correspondent at Berlin reports German exports increasing, and prices firming. The Chinese market is more active. The markets in France and Belgium have improved slightly and some prices are higher. The European steel entente has agreed in principle on export regulations.

## Britain and Continent Find Exports Are Fading

**London**—Reports concerning iron and steel export trade generally indicate little improvement, whether coming from Great Britain or from the continent of Europe. Apart from some orders received from Canada and a number of engineering contracts calling for an interesting tonnage of steel, British iron and steel export business is at a low ebb.

Conditions are all the more difficult because Continental prices still are weakening, and competition from French, Belgian and German steel in the British market itself is acute. In addition to this, up to the past week, further parcels of Indian pig iron have reached the north of England and into Scotland.

The only bright spot so far as Great Britain is concerned is possibility of renewal of trade with India, following the recent interview between the viceroy and Mr. Gandhi; and hopes also are entertained that the visit of the Prince of Wales to the Argentine Republic will eventually bring about closer trade relations with that country.

Among the engineering contracts recently obtained in Great Britain are the following: Bridge for the harbor at Auckland, New Zealand, ordered from the Cleveland Bridge & Engineering Co. Ltd., Darlington; 40 locomotives for various Indian companies, divided between the North British Locomotive Co. Ltd., Glasgow, the Vulcan Foundry Ltd., Newton-le-Willows; 7 locomotive boilers for China, ordered from the North British Locomotive Co. Ltd., Glasgow; 14 narrow-gage all-steel bogie cars for South Africa, passed to the Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd., Birmingham; four 5-ton level luffing cranes, complete with transporter bridges, for Gibraltar, ordered from Clarke, Chapman & Co. Ltd., Gateshead; 250,000 steel sleepers and 3000 tons of rails for the South African Railways, ordered from the United Steel Companies Ltd.; 21,565 tons of steel sleepers, also for the South African Railways, divided between the Cargo Fleet Iron Co. Ltd., Dorman, Long & Co. Ltd., and Pease & Partners Ltd., Middlesbrough; steel bridgework for the Buenos Aires Pacific railway, passed to the Horsehay Co. Ltd., Shropshire.

### German Improvement Slight

From the Continent, reports concerning iron and steel export trade are equally depressing. In Germany, the volume of business fluctuates, but generally remains below normal. Orders have been increasing from certain markets, particularly in eastern territories. There has been business with India in structural steel, wire rods and hoops, and inquiry from the Argentine Republic has improved. Although prices quoted by German makers are higher than those prevailing in France, Belgium and Luxemburg, substantial concessions are made to meet these western competitors and German blooms have been sold at £3 4s ($15.50), billets at £3 6s ($16), merchant bars at £3 17s 6d ($19.80), beams at £3 10s ($17), and plates at £4 10s ($21.80).

According to various reports, the

## Current Iron and Steel Prices of Europe

| Dollars at Rates of Exchange, March 30 | British Gross Tons U. K. Ports | | French Metric Tons Channel Ports | | Belgium and Luxemburg Metric Tons Channel Ports | | German Metric Tons Rotterdam or North Sea Port | |
|---|---|---|---|---|---|---|---|---|
| **Export Prices f.o.b. Ship at Port of Dispatch—By Cable** | | | | | | | | |
| **PIG IRON** | | £ s d | | £ s d | | £ s d | | £ s d |
| Foundry No. 3**..... | $14.22 | 2 18 6* | $11.91 | 2 9 0 | $11.91 | 2 9 0 | $12.15 | 2 10 0 |
| Basic-bessemer..... | 14.58 | 3 0 0† | 11.54 | 2 7 6 | 11.54 | 2 7 6 | 13.37 | 2 15 0 |
| Hematite, Phos. .02-.05 | 16.52 | 3 8 0 | ..... | ..... | ..... | ..... | 17.01 | 3 10 0 |
| **SEMIFINISHED STEEL** | | | | | | | | |
| Billets..... | $26.12 | 5 7 6 | $16.28 | 3 7 0 | $16.28 | 3 7 0 | $16.04 | 3 6 0 |
| Wire rods..... | 41.31 | 8 10 0 | 29.16 | 6 0 0 | 29.16 | 6 0 0 | 29.16 | 6 0 0 |
| **FINISHED STEEL** | | | | | | | | |
| Standard rails..... | $40.10 | 8 5 0 | $31.59 | 6 10 0 | $31.59 | 6 10 0 | $31.59 | 6 10 0 |
| Merchant bars..... | 1.68c | 7 15 0 | .85c | 3 17 0 | .85c | 3 17 0 | .85c | 3 17 0 |
| Structural shapes..... | 1.68c | 7 15 0 | .75c | 3 8 6 | .75c | 3 8 6 | .76c | 3 9 0 |
| Plates..... | 1.79c | 8 5 0 | .96c | 4 7 6 | .96c | 4 7 6 | .99c | 4 10 0 |
| Sheets, black, 24 gage | 1.90c | 8 15 0 | 1.80c | 8 4 0 | 1.80c | 8 4 0 | 1.93c | 8 15 0 |
| Sheets, gal., 24 ga. corr. | 2.71c | 12 10 0 | 2.23c | 10 2 6 | 2.23c | 10 2 6 | 2.31c | 10 10 0 |
| Bands and strips..... | 2.06c | 9 10 0 | .96c | 4 7 6 | .96c | 4 7 6 | .99c | 4 10 0 |
| Plain wire, base..... | 2.06c | 9 10 0 | 1.10c | 5 0 0 | 1.10c | 5 0 0 | 1.10c | 5 0 0 |
| Galvanized wire, base.. | 2.39c | 11 0 0 | 1.46c | 6 12 6 | 1.46c | 6 12 6 | 1.38c | 6 5 0 |
| Wire nails, base..... | 2.39c | 11 0 0 | 1.13c | 5 2 6 | 1.13c | 5 2 6 | 1.10c | 5 0 0 |
| Tin plate, box 108 lb... | $ 3.77 | 0 15 6 | ..... | ..... | ..... | ..... | $ 8.26 | 1 14 0 |

**Domestic Prices at Works or Furnace—Last Reported**

| | | | French Francs | | Belgian Francs | | Renten Marks | |
|---|---|---|---|---|---|---|---|---|
| Fdy. No. 3 Pig Iron** | $14.22 | 2 18 6 | $10.98 | 280(2) | $13.06 | 470 | $18.60 | 78 |
| Basic pig iron..... | 14.58 | 3 0 0 | 12.74 | 325(1) | 11.95 | 430 | 20.38 | 85.50 |
| Furnace Coke..... | 2.92 | 0 12 0 | 6.19 | 158 | 5.00 | 180 | 5.10 | 21.40 |
| Billets..... | 26.73 | 5 10 0 | 19.21 | 490 | 17.24 | 620 | 26.34 | 110.50 |
| Standard rails..... | 1.79c | 8 5 0 | 1.41c | 785 | 1.57c | 1,210 | 1.37c | 127 |
| Merchant bars..... | 1.68c | 7 15 0 | .95c | 525 | .88c | 680 | 1.38c | 128 |
| Shapes..... | 1.90c | 8 15 0 | .99c | 550 | .86c | 665 | 1.35c | 125 |
| Plates..... | 1.95c | 9 0 0‡ | 1.26c | 700 | 1.03c | 795 | 1.58c | 147 |
| Sheets, black, 24 gage | 1.90c | 8 15 0 | 2.21c | 1,230 | 2.34c | 1,800 | 1.26c | 117 |
| Sheets, gal. 24 ga., corr. | 2.39c | 11 0 0 | 2.66c | 1,475 | 2.73c | 2,100 | 3.56c | 330 |
| Plain wire..... | 2.06c | 9 10 0 | 1.98c | 1,100 | 2.15c | 1,650 | 2.24c | 207 |
| Bands and strips..... | 2.06c | 9 10 0 | 1.23c | 685 | 1.27c | 975 | 1.60c | 148 |

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 0d ($2.92) f. o. b. Ferromanganese £16 9s 0d ($79.95) delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f. o. b.; **Silicon 2.50-3.00. British quotations are for basic openhearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

# AMERICAN

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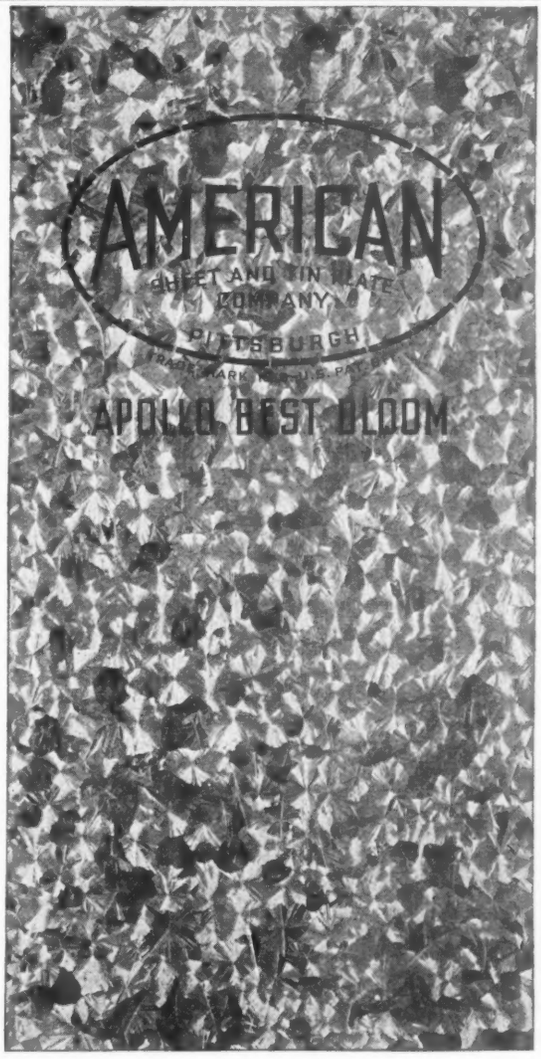


APOLLO BEST BLOOM Galvanized Sheets have been the leader since 1884—and are well known for their ductility, splendid coating, and general excellence. This brand binds together more satisfied sheet metal workers than any other make.

KEYSTONE-APOLLO Galvanized embodies all the high qualities of the Apollo brand, together with the added feature of a *copper steel* base which gives maximum *resistance to rust* and corrosion.

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**Blue Annealed Sheets**
**Galvanized Sheets**
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US STEEL

## American Sheet and Tin Plate Company

GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES:

AMERICAN BRIDGE COMPANY
AMERICAN SHEET AND TIN PLATE COMPANY
AMERICAN STEEL AND WIRE COMPANY
CARNEGIE STEEL COMPANY
COLUMBIA STEEL COMPANY
CYCLONE FENCE COMPANY
FEDERAL SHIPB'LDG. & DRY DOCK CO.
ILLINOIS STEEL COMPANY
MINNESOTA STEEL COMPANY
NATIONAL TUBE COMPANY
OIL WELL SUPPLY COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & RAILROAD CO.
UNIVERSAL ATLAS CEMENT COMPANY

*Pacific Coast Distributors*—Columbia Steel Company, Russ Building, San Francisco, Calif.
*Export Distributors*—United States Steel Products Company, 30 Church Street, New York, N. Y.

Germans are dismayed by the fact that the Soviet government has placed substantial orders in Poland, which are estimated in certain quarters at 70,000 tons. It also is reported that an important Czech concern has received an order from Soviet Russia for 40,000 tons of merchant steel and plates, with the option of supplying a further tonnage later. Keen competition has forced German wiremakers to reduce prices for export.

The situation in Belgium is becoming critical, owing to lack of orders and to weakening of prices, the level of which is so low that some of the larger concerns, such as Cockerill, Ougree-Marihaye, and Angleur, refuse to quote. Merchant bars have been quoted as low as £3 15s ($18.15).

## Belgian Trade Falls Off Sharply from 1930

**Brussels**—Exports of pig iron from Belgium and Luxemburg during 1930 amounted to 115,411 metric tons, compared with 121,043 tons in 1929, a decrease of 4.65 per cent. Exports of other iron and steel products totaled 4,120,750 metric tons, against 4,734,000 tons in 1929, a decrease of 13 per cent.

Imports of pig iron into Belgium and Luxemburg in 1930 were 400,232 metric tons, compared with 673,785 tons in 1929, a decrease of 40.5 per cent, and imports of other iron and steel products amounted to 338,015 tons, against 446,250 tons in 1929, a decrease of 24.3 per cent. Figures follow:

| | —Imports— | | —Exports— | |
|---|---|---|---|---|
| Mon. ave. | Pig iron | Other iron and steel | Pig iron | Other iron and steel |
| 1927 | 31,760 | 28,000 | 11,350 | 388,000 |
| 1928 | 45,910 | 38,000 | 8,240 | 380,000 |
| 1929 | 56,150 | 37,000 | 10,090 | 394,500 |
| 1930 | | | | |
| Jan. | 44,274 | 37,200 | 13,551 | 392,000 |
| Feb. | 38,121 | 32,700 | 7,320 | 295,600 |
| Mar. | 42,240 | 29,600 | 9,412 | 403,900 |
| April | 36,504 | 26,200 | 10,624 | 436,400 |
| May | 34,007 | 28,000 | 10,266 | 355,600 |
| June | 29,287 | 28,400 | 8,410 | 314,500 |
| July | 31,676 | 23,750 | 7,876 | 318,600 |
| Aug. | 26,996 | 20,900 | 8,196 | 282,400 |
| Sept. | 32,823 | 22,200 | 10,014 | 356,500 |
| Oct. | 30,612 | 26,400 | 8,963 | 345,000 |
| Nov. | 25,403 | 29,800 | 9,251 | 310,400 |
| Dec. | 28,289 | 32,865 | 11,528 | 309,850 |
| Total | 400,232 | 338,015 | 115,411 | 4,120,750 |

## German Export Decline Heavy; Imports Small

**Berlin** — Provisional statistics show that exports of pig iron and ferroalloys from Germany in 1930 totaled 227,957 metric tons, against 433,388 tons in 1929, a decrease of 47.4 per cent. Exports of other iron and steel products, including scrap were 4,566,396 metric tons, compared with 5,379,970 tons in 1929, a decrease of 15.2 per cent.

Imports of pig iron and ferroalloys into Germany in 1930 amounted to 172,055 metric tons, compared with 177,212 tons in 1929, a decrease of 2.9 per cent, and imports of other iron and steel products totalled 1,131,836 tons, against 1,641,239 tons, a decrease of 31 per cent. Figures follow:

| | — Imports — | | — Exports — | |
|---|---|---|---|---|
| Mon. ave. | Pig iron and ferro-alloys | Other iron and steel | Pig iron and ferro-alloys | Other iron and steel |
| 1927 | 23,895 | 217,505 | 29,910 | 347,645 |
| 1928 | 25,535 | 174,250 | 24,585 | 394,575 |
| 1929 | 14,765 | 137,435 | 36,115 | 448,330 |
| 1930 | | | | |
| Jan. | 22,004 | 105,127 | 33,153 | 488,245 |
| Feb. | 13,597 | 98,397 | 24,271 | 409,822 |
| March | 16,777 | 107,401 | 25,983 | 465,166 |
| April | 12,032 | 113,195 | 18,364 | 405,633 |
| May | 16,070 | 114,548 | 23,164 | 439,791 |
| June | 13,669 | 88,342 | 18,814 | 341,828 |
| July | 14,689 | 90,630 | 16,811 | 332,546 |
| August | 12,495 | 91,539 | 12,929 | 324,751 |
| Sept. | 14,022 | 79,017 | 12,652 | 355,485 |
| Oct. | 15,498 | 83,071 | 16,138 | 331,976 |
| Nov. | 11,034 | 85,607 | 14,323 | 345,914 |
| Dec. | 10,168 | 74,962 | 11,355 | 325,239 |
| Total | 172,055 | 1,131,836 | 227,957 | 4,566,396 |

## French Depression Grows; Idle Workers on Increase

**Paris**—The situation on the French iron and steel market remains the same, and the economic depression seems to be increasingly severe. This state of affairs could be seriously aggravated as a consequence of the decrease in the volume of exported goods. It is rumored that the deficiency in the balance of French commerce is more important than it had been during the previous few months.

Furthermore, traffic on French railroads is rapidly declining, and receipts are 11.36 per cent below those of the corresponding period of 1930. These figures are larger for the Alsace-Lorraine and eastern railroads, which are equal to 16 and 13 per cent respectively, illustrating the fact that the crisis is affecting more particularly the heavy industries. From a financial point of view, the situation is the same, and many small traders and industrialists are requesting delay for their overdue payments.

Unemployment is developing in all parts of the country, but so far no industries have definitely closed down, although works cease operations for one, two, or three days a week. This is the reason why salaries generally are maintained. The automobile industry is producing at a satisfactory rate, and it is said that Citroen is manufacturing 300 cars per day. The firm of Renault is in the same position. No change has occurred in the collieries. Partial unemployment is general, and the miners' syndicate is maintaining its former decision concerning a reduction of wages.

The pig iron market is fairly steady and it seems that producers have not decided to accept lower prices than those now quoted. British competition appears to be less keen.

Prices of merchant bars are weak and buyers are hesitant in passing their orders, as they feel sure that they will obtain better prices if they wait a little longer. During the past fortnight the decrease in prices has been 20 or 30 francs, and it is easy to place orders for reinforced concrete bars at 450 to 460 francs ($17.60 to $18.00). Other rolled material is quoted at 480 to 500 francs ($18.70 to $19.50) in the east of France, and the Providence concern is quoting at 510 francs ($19.90) in the north of France. Prices of beams and semifinished products remain unchanged.

Wire products are weaker. Wire nails are quoted at 1200 francs, ($47.00) and annealed wire at 1150 francs ($44.75). No satisfactory signs of spring buying are yet apparent.

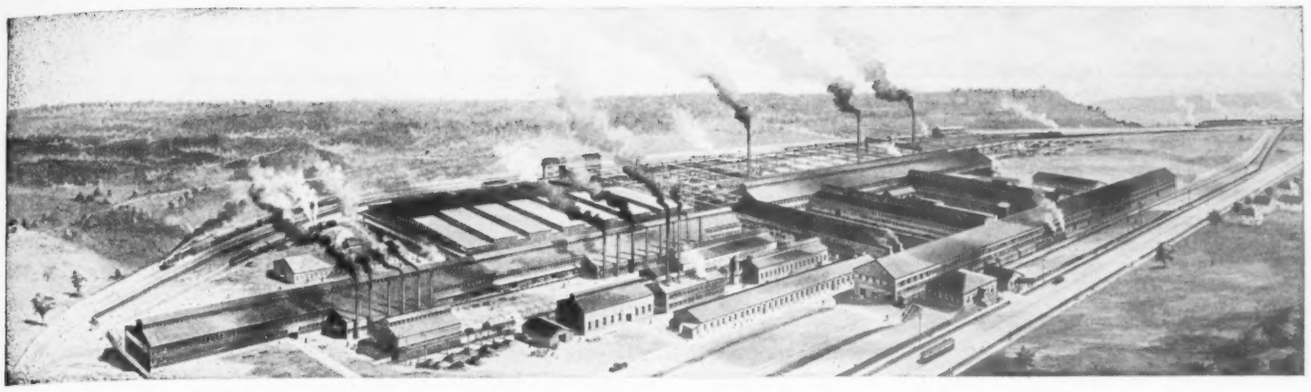
## French Loss in 1930 Foreign Trade Is Light

**Paris**—Exports of pig iron from France in 1930 are given provisionally as 527,065 metric tons, compared with 561,138 tons in 1929, a decrease of 6.25 per cent.

Exports of other iron and steel products in 1930 totaled 3,243,043 metric tons, against 3,355,330 tons in 1929, a decrease of 3.35 per cent. The tonnage of steel scrap exported in 1930 was 309,098 metric tons, which went principally to Italy, followed by Belgium and Luxemburg.

Imports of pig iron into France in 1930 were 159,741 metric tons, against 40,161 tons in 1929, and imports of other iron and steel products were 283,910 tons, compared with 181,228 tons. The 1930 import figures do not compare with those for 1929, owing to the fact that effective Jan. 1, 1930, import figures include material which is re-exported after having been fabricated. Figures follow:

| | —Imports— | | —Exports— | |
|---|---|---|---|---|
| Mon. ave. | Pig iron | Other iron and steel products | Pig iron | Other iron and steel products |
| 1927 | 3,230 | 7,440 | 69,640 | 404,730 |
| 1928 | 3,365 | 8,320 | 52,215 | 368,410 |
| 1929 | 3,345 | 15,100 | 46,760 | 279,610 |
| 1930 | | | | |
| Jan. | 11,806 | 22,374 | 44,016 | 259,133 |
| Feb. | 20,463 | 24,965 | 44,977 | 297,208 |
| March | 16,747 | 28,024 | 42,522 | 269,752 |
| April | 15,195 | 25,347 | 41,630 | 277,886 |
| May | 15,803 | 23,020 | 39,576 | 263,606 |
| June | 12,715 | 24,261 | 43,046 | 291,279 |
| July | 10,847 | 21,167 | 45,706 | 207,023 |
| Aug. | 11,702 | 24,323 | 45,382 | 273,648 |
| Sept. | 8,689 | 20,915 | 44,560 | 235,976 |
| Oct. | 10,670 | 18,251 | 46,842 | 265,973 |
| Nov. | 13,901 | 29,688 | 44,048 | 301,121 |
| Dec. | 16,203 | 21,575 | 44,760 | 299,738 |
| Total | 159,741 | 283,910 | 527,065 | 3,243,043 |



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# Machinery

GENERAL opinions are that March of this year, with its discouraging low record of machine tool business, need not necessarily be considered as a trend indicator. Reasonably conservative builders and dealers who expected slight improvement late in the spring, still look for such improvement. They feel that among orders which are being held up are many which cannot be held up much longer in the face of known crying needs for the equipment. Already sales resistance has broken down here and there. Some railroads have begun to buy tools and substantial orders have been released by manufacturers of electrical equipment.

**New York**—Machine tool buying and inquiry shows little improvement. March sales with most dealers and builders have failed to maintain the rate achieved earlier in the year. While inquiry continues to be fairly heavy, buyers are slow in releasing orders and most buying continues to be for replacement. Railroads are not taking much equipment, sales being limited to one or two vitally needed tools at a time.

Indications of more activity on the part of automobile builders have not yet been materially noted in a better inquiry from that source. Ball bearing makers in some instances are operating on a 40-hour week basis. Until business recovery is more genral, it is felt that dullness is likely to continue in the machine tool business.

**Worcester, Mass.**—Amtorg Trading Corp. remains the dominant figure in the market and recent orders have come to makers of lathes and drills for several units and to makers of magnetic chucks and small grinding machines. One large manufacturer is still producing grinders of the larger sizes on an order booked several weeks ago. Meanwhile the domestic market shows few signs of reawakened activity. With the completion of orders for the new plant of Simonds Saw & Steel Co., Fitchburg, Mass., the situation has reverted to its status of two months ago, with conditions generally spotty and inquiry light.

Outside of business from abroad the brightest hope now lies with the railroads which have been more active in inquiring this past week than for some time. However, no awards have been made yet and it is problematical when this active inquiry will develop into actual business. The first quarter is terminating on a low level as far as production is concerned.

**Pittsburgh**—Recent quietness in the machine tool market has been overcome by substantial purchases by the General Electric Co., Westinghouse Electric & Mfg. Co., and Mesta Machine Co. Recent orders for railway equipment have prompted the placing of tools by the first two companies while Mesta Machine Co. continues brisk production of rolling mill equipment and is well booked for many months ahead.

The Mesta order includes the two radial drills and two planers. General Electric has placed a large number of various tools for its Erie, Pa., plant. Conditions in the machinery market otherwise are dull, with buying failing to expand either in number or size of orders. Inquiry also is light and lacks improvement over a month ago.

**Cleveland**—Conditions have improved little if any during March and several machine tool builders and dealers report that the month marks a new low point for the year. Nevertheless, pending inquiries are inspiring active sales efforts and there is a feeling that the present low level will not necessarily continue through the summer. This is based upon the belief that orders are being held up which cannot possibly continue to be held up much longer without interfering with manufacturing efficiency.

General business conditions have improved slightly since last week and in a number of instances manufacturing plants have stepped up production. As a result the employment situation has been relieved at a time when the peak of unemployment had been predicted. Companies specializing on contract manufacturing on a production basis report that many new mechanical devices are being brought to their attention at this time, with capital for promotion of such projects becoming a little easier to obtain.

**Chicago**—Moderate improvement in the railroad outlook is counteracted to some degree by further delayed closing of industrial machine tool business for which estimates have been asked. Chicago, Great Western closed recently on about $26,000 worth of equipment, among the larger machines being a shaper, several lathes and a hydraulic press. Burlington has purchased a 5-foot radial drill, as well as several lesser items. It is reported that Santa Fe may order $65,000 to $75,000 worth of machine tools soon, possibly early in April.

A few industrial inquiries are shaping up, including about $10,000 worth of tools in the Chicago area, and about $25,000 to $30,000 worth of equipment for an Iowa car foundry. There are prospects that several orders in the Milwaukee district will be closed shortly. While several houses note improved billing during March, the month's business on the whole is estimated as the lowest for March since 1921.

## Exports of Metalworking Machinery

| | February | | January through February | |
|---|---|---|---|---|
| | 1931 | 1930 | 1931 | 1930 |
| Engine lathes | 43 | 95 | 90 | 153 |
| Turret lathes | 14 | 34 | 40 | 67 |
| Other lathes | 69 | 45 | 116 | 138 |
| Vertical boring mills and chucking machines | 14 | 24 | 30 | 51 |
| Thread-cutting and automatic screw machines | 18 | 69 | 35 | 159 |
| Knee and column type milling machines | 4 | 27 | 12 | 71 |
| Other milling machines | 9 | 51 | 39 | 176 |
| Gear-cutting machines | 52 | 20 | 150 | 62 |
| Vertical drilling machines | 27 | 119 | 39 | 200 |
| Radial drilling machines | 6 | 11 | 17 | 14 |
| Other drilling machines | 530 | 187 | 602 | 468 |
| Planers and shapers | 14 | 16 | 50 | 61 |
| Surface grinding machines | 12 | 32 | 21 | 58 |
| External cylindrical grinding machines | 20 | 33 | 33 | 84 |
| Internal grinding machines | 69 | 89 | 80 | 115 |
| Tool grinding, cutter grinding, and universal grinding machines | 63 | 114 | 160 | 338 |
| Pneumatic portable tools | 750 | 1,477 | 1,635 | 3,441 |
| Chucks or machine tools | 965 | 2,111 | 1,424 | 4,555 |

# Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

## New England

BILLERICA, MASS. — Boston & Maine railroad, 150 Causeway street, has awarded contract for the erection of a roundhouse, to be built at a cost of about $45,000. G. A. Kirley, Boston, is chief engineer.

SPRINGFIELD, MASS.—Commanding officer, Springfield armory, will receive bids April 10 for construction of a steam power plant. Plans are private. Cost is estimated at $100,000.

WOBURN, MASS.—City council has plans for waterworks improvements and will purchase pumps. Total cost is estimated at $110,000.

## New York

NEW YORK—A.B.C. Metals Corp. has been incorporated by Phillips, Mahoney, Leibell & Fielding, 51 Chambers street, to make door and window equipment.

NEW YORK—Everlast Electric Tool Co. has been incorporated with $15,000 and 300 common shares by C. J. Kemins, 51 Chambers street, to deal in tools.

NEW YORK—Kubro Erecting Co. has been incorporated by L. Rosenberg, 270 Madison avenue, to deal in fabricated steel.

NEW YORK—Holmes airport, Northern boulevard, Jackson Heights, plans to build a hangar unit and install equipment. Cost is estimated at $70,000.

TICONDEROGA—Diesel Contracting Corp. has been incorporated with $25,000 capital by Lockwood & Whitely, to engage in construction.

## New Jersey

NEWARK—Ronson Products Inc. has been incorporated with 1000 common shares by McCarter & English, to make metal novelties.

RED BANK — Monmouth Marine Motors Corp. has been incorporated with $50,000 capital by Harry Klatsky, to manufacture gasoline engines.

WASHINGTON—Eckels Air Service Inc. has been incorporated with $100,000 capital by Clark C. Bowers to manufacture and operate aircraft.

## Pennsylvania

CARNEGIE — Carnegie Foundry & Machine Co. has been incorporated with $10,000 capital by E. L. McWilliams, 95 Bradford avenue, Crafton, Pa., to manufacture and sell metals and metal articles.

ELKLAND—Tuna Iron Works, operated by F. Hamilton Co. Inc., Bradford, Pa., is opening a branch plant here in the building formerly occupied by the Elkland Foundry & Machine Shop. Company manufactures tools, boilers and engines.

ERIE—City council has provided for erection of a pumping station on Cranch avenue, as a part of a sewage disposal project. Unit will cost about $25,000. Contract is held by J. N. Chester Engineering Co.

OIL CITY—Oil City Boiler Works plans to erect a plant addition. Estimated cost, $50,000.

PHILADELPHIA—Stein Metal Mfg. Co. Inc. has been incorporated with 200 no par shares by Anna Stein, 4059 Roosevelt boulevard, to manufacture and sell restaurant equipment.

PITTSBURGH—Metal Service Corp. has been incorporated with 5000 no par shares by M. G. McClurkin, 908 Park building, to conduct a metal service business.

PITTSBURGH—Specialties Inc. has been incorporated with $5000 capital by Karl E. Weise, 1200 Mayview road, Bridgeville, Pa., to manufacture and sell electrical appliances.

PITTSBURGH—S. & R. Grinding & Machine Co. has been incorporated with $10,000 capital by Gertrude Reynolds, 420 South Graham street, to manufacture and sell machinery, castings, forgings and bearings.

YORK—Paramount Sign Co. has been incorporated by Fred R. Yost to manufacture metal signs and illuminating devices.

## Ohio

CINCINNATI—Cincinnati Union Terminal Co., Col. Henry M. Waite chief engineer, will award contract for the construction of a new railroad terminal here, to cost approximately $5,900,000. Contracts will be taken separately for accessory buildings and maintenance units.

CLEVELAND—H. J. Bowie Co., 9205 Inman avenue, is in the market for a punch press.

CLEVELAND — Arthur Gent, 5810 Richmond road, manufacturer of automatic screw machine products, is in the market for a screw machine.

CLEVELAND — Weber Brass Co., 1111 Power avenue, has awarded contract to A. A. Lane Construction Co., 1873 East Fifty-fifth street, for a plant addition to be erected at Payne avenue and East Thirty-fifth street. E. G. Hatch, 863 Holmsdale avenue, is architect.

CLEVELAND—American Multigraph Co., East Fortieth street and Kelley avenue, recently noted as planning a plant addition, advises through W. L. Brewer, assistant to the president, that a new plant will be built to house both the Addressograph and Multigraph companies, but location has not yet been definitely determined. (Noted March 26.)

CLEVELAND — Rola Co., Artcraft building, 2530 Superior avenue, has taken 26,000 additional square feet under lease for expansion purposes, the Oakland, Calif., plant of the company being consolidated with the local plant. H. S. Tenny is president and B. A. Engholm vice president in charge of production. Company manufactures radio loud speakers.

LIMA—Lima Sheet Metal Products Co. advises through H. W. Wheatley, general manager, that the company does not contemplate placing machinery in the new plant addition being erected at the present time. (Noted March 26.)

## Indiana

HAMMOND—Standard Steel Specialty Co. has let contract for a 1-story plant addition, 50 x 200 feet, to be built at Clark avenue and 142nd street. Estimated cost, $42,000.

KENTLAND—L. E. Jones, Morocco, Ind., has organized Rebuild Machinery Co. to operate a repair and rebuilding shop. Company has secured the A. W. Johnston machine shop on East Goss street.

## Michigan

DETROIT—International Conveyor & Washer Corp., 1059 Beaufait avenue, whose incorporation recently was noted, advises through Neil B. Morrish, secretary, that the company has leased and equipped a plant at the above address and will manufacture conveyors and industrial washers and do miscellaneous iron and sheet metal work. Erich A. Jastrow is president and Willard C. Wernet vice president. (Noted March 26.)

GRAND RAPIDS—Non-Skid Sanding Equipment Co. has been incorporated with 5000 no par shares by David S. Driver and E. W. Snell, to manufacture and deal in metal products.

IRONWOOD—Boiler house belonging to Iron county recently was damaged by fire. Adjoining machine shop also was slightly damaged.

## Illinois

CHICAGO—Whitely Vault & Iron Works Inc., 447 North Halsted street, has been incorporated by Weinroh & Feldman, 120 South LaSalle street, to manufacture vaults, safes and machinery.

CHICAGO—Ingersoll Steel & Disc Co., with local office at 119th and Morgan streets, will make additions to its local

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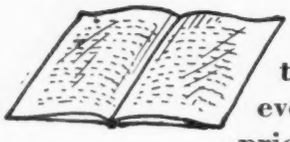

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# STEEL

**PENTON BUILDING CLEVELAND**

shops. Company manufactures steel discs for farm machinery.

MILLSTADT—City council will receive bids for a deep well pump and other equipment May 15. Cost is estimated at $45,000.

## Southern States

WASHINGTON—A. L. Flint, general purchasing officer, Panama Canal, will receive bids soon for construction of a hydroelectric power project in the canal zone.

JACKSONVILLE, FLA. — Combination Railway Car Door Co. has been incorporated with $45,000 capital by O. Williamson, 57 West Thirtieth street, to manufacture car doors.

JACKSON, MISS.—Jackson Sheet Metal Works has been incorporated by J. B. Wilson, 927 North Congress street, to manufacture roofing, gutters and other sheet metal products.

LAUREL, MISS.—City, M. W. McLaurin mayor, will receive bids April 6 for construction of a hangar unit, 80 x 100 feet, recently noted, and also will receive bids for a repair shop, 40 x 50 feet. (Noted Dec. 11.)

ELIZABETH CITY, N. C.—Riverside Machine Shop, Riverside avenue, J. L. Bell manager, recently was damaged by fire. Loss is estimated at $12,000.

CHARLOTTESVILLE, VA.—University of Virginia, Dr. Edwin A. Alderman president, will build an engineering building at a cost of about $500,000. Plans in charge of E. S. Campbell, 55 West Range street, are being completed.

HAMPTON ROADS, VA.—Bureau of supplies and accounts, navy department, Washington, will receive bids April 7 on schedule 5413 for one motor-driven universal sawing machine.

RICHMOND, VA.—Hackley Morrison, Mutual building, is reported to be in the market for a 40-horsepower vertical boiler and a steam engine, 80 to 100 horsepower.

## Missouri

ST. LOUIS—Busch-Sulzer Bros. Diesel Engine Co., Second and Utah streets, advises through Edward P. Pollister, president and general manager, that a new erecting shop suitable for testing diesel engines up to 25,000 horsepower per engine and an extension to the iron foundry, with 75 ton crane runway, will be built. (Noted March 26.)

## Arkansas

BLYTHEVILLE—City council proposes installation of a sewage system, including pumps. E. J. Heaton is engineer. Cost is estimated at $70,000.

## Oklahoma

TULSA—General Metals Corp. has been incorporated with $25,000 capital by W. H. Owens, Wright building, to develop lead, zinc and other metal mining properties.

## Texas

DALLAS—Texas Automatic Sprinkler Co., 1411 Santa Fe building, has let contract to W. H. Reeves, 3310 Commerce street, for construction of a plant and warehouse building, 95 x 100 feet. Cost is estimated at $22,000. Lang & Witchell, First National Bank building, are architects.

DOUGLASS—Texas Pipe Line Co., Houston, Tex., will build a pumping station near here. E. H. Catlin, Texaco building, Houston, is chief engineer in charge of construction.

EL PASO—J. P. Dyer, box 1372, representative of Nichols Copper Co., 25 Broad street, New York, is in charge of contemplated plans for a new plant here. Maturity is indefinite. Proposed construction would include a rod mill and copper wire factory.

FT. WORTH—City has awarded contract to Quisle & Andrews, 2217 West Seventh street, for construction of a repair shop at Meacham field. Plans call for a larger unit than previously had been planned. Structure will be 80 x 206 feet. (Noted Oct. 19.)

HOUSTON—Republic Oil & Refining Co., Second National Bank building, is considering erection of an oil refinery to cost $1,000,000, to have machine shop facilities and power plant unit.

LLANO—Premier Granite Co. is considering erection of a plant for finishing stone. Estimated cost, $80,000.

SAN ANTONIO—L. E. Rush, Western Life Insurance building, is in charge of preliminary plans of the Hydro-Plant Corp., D. J. Little president. Company has secured a site and plans to build a plant at an approximate cost of $500,000, for the manufacture of hydraulic brakes, hydraulic pumps and other hydraulic machinery. Machine shop will be included.

## Wisconsin

MILWAUKEE—O. H. Henschel, consulting engineer, 401 Commerce building, is preparing preliminary plans for a central power plant. Four 400-horsepower stoker-fired boilers and other equipment will be installed.

MILWAUKEE—Incinor Corp. has been organized by Arnold A. Naulin, formerly head of the Home Incinerator Co., to engage in the manufacture of portable, gas-fired incinerators and industrial units. Offices have been established at 174 West Wisconsin avenue.

OAKFIELD — City, H. W. Warner clerk, closes bids April 10 for construction of a municipal waterworks plant, requiring one 350-gallons per minute deep well turbine, one 350-gallons per minute general service pump and one 500-gallons per minute auxiliary pump with gasoline engine. A 60,000-gallon steel storage tank will be built. McMahon Engineering Co., Menasha, Wis., is in charge.

RICHLAND CENTER — Richland Machine Works has under construction a plant addition, 36 x 56 feet. LaVerne Smith is manager.

## North Dakota

KINCAID — Montana-Dakota Power Co., through Garland & Scribbins, engineers, 38 South Dearborn street, Chicago, will let contracts for coal conveying machinery to be installed in the power plant addition to be built here. General contract is held by J. C. Boespflug, Miles City, Mont. (Noted March 19.)

## Kansas

COFFEYVILLE — Manufacturing plant of the North American Car Corp., 327 South LaSalle street, Chicago, recently was virtually destroyed by fire with estimated loss of $200,000. Rebuilding plans are in progress for units as follows: Machine shop, boiler shop, car shop, blacksmith shop and power house. F. O. Leffler is plant superintendent.

WICHITA — Standard Steel Mills, John A. Logan manager, advises that machinery has been purchased for its cold roll mill here.

## Pacific Coast

LOS ANGELES—City, W. K. Foster, Klinker building, engineer, is preparing preliminary plans for a pumping plant, in which two 4-inch pumps will be installed. Cost is estimated at $100,000.

SANTA BARBARA, CALIF. — Great Western Aero Corp. Ltd. is reported to be planning an airport and aircraft manufacturing plant, to be built at a cost of about $100,000.

SAN DIEGO, CALIF.—San Diego Consolidated Gas & Electric Co. plans to build a power substation. Estimated cost, $60,000.

SUNNYVALE, CALIF. — Navy department, Washington, will call for bids in May, work to start in July, for the $2,250,000 hangar to be erected at the dirigible base to be established here. Total cost of the project is estimated at $5,000,000.

ANACORTES, WASH.—Quinn Copper Co. has been incorporated with $49,000 capital by Schwellenbach & Merrick, attorneys, Seattle.

SEATTLE—Sunset Machinery Co. has been incorporated by J. D. Olds and James B. Miner.

SEATTLE—Olympic Foundry Co., 5200 Ninth avenue south, has completed plans for erection of a shop building, 28 x 68 feet.

## Dominion of Canada

VANCOUVER, B. C.—Western Bridge Co. Ltd., foot of Columbia avenue, will build a plant addition on the site of the former Coughlan shipyards. Victor Spencer is president. Cost of the unit is estimated at $500,000.

CAMPBELLTON, N. B.—City, J. T.

Reid clerk, is considering erection of a power plant to cost $70,000.

GRAND FALLS, N. B.—Town council will purchase equipment for electric light and waterworks plants, to cost $20,000. F. W. Pirie is mayor.

ALGOMA, ONT.—Algoma District Power Co. Ltd., 527 Queen street east, Sault Ste. Marie, Ont., will build a power plant to develop 100,000 horsepower in this district. Lang & Ross, 650 Queen street east, Sault Ste. Marie, are engineers.

HAMILTON, ONT.—Anchor Cap & Closure Corp., I. R. Stewart president, 22 Queens avenue, Long Island City, N. Y., plans to build a plant here on a site recently acquired.

OTTAWA, ONT.—Illuminated Signs Ltd. has been incorporated with $40,000 capital by Harold Bramah, to make signs.

OTTAWA, ONT.—Kleen Motor Mfg. Co. Ltd. has been incorporated with $40,000 capital by George W. Armstrong, as a manufacturer.

OWEN SOUND, ONT.—Construction will be started about June 1 of a hangar as the first unit of a sea plane base for Imperial Airways Ltd., W. Anderson president, Toronto, Ont.

ST. CATHERINES, ONT.—Welding & Engineering Ltd., box 56, has been incorporated. William Cockram, president, advises that the company has purchased the entire cream separator manufacturing interests of the Hydroil Corp., Lebanon, Ind. Head office and plant is at Port Dalhousie, Ont. Business previously carried on under name of Welded Metals & Engineering Co. will be continued. Material purchases include tank, boiler and structural steel, tinware, brass castings, cold-rolled and mild steel bar stock, gray iron and steel castings. At present time company is in the market for a spot welder.

ST. THOMAS, ONT.—Hydroelectric commission is planning to install new equipment in Edgewood road substation. Estimated cost, $20,000. J. W. Peart, Talbot road, is superintendent.

TEMIGAMI, ONT.—White Bear Mine Ltd., 318 Transportation building, Montreal, Que., advises through R. Julien, president, that the company is in the process of organization and will eventually require mining equipment for operations near here. (Noted March 26.)

TORONTO, ONT.—Continental Railway Equipment Co. Ltd. has been incorporated with 1,000,000 no par shares by Edward B. James, to manufacture and deal in engines and machinery.

TORONTO, ONT.—Radiator Specialty Co., Charlotte, N. C., has established a branch plant at 520 King street west for the manufacture of solder seal products for the automotive and plumbing trades.

TORONTO, ONT.—Twentieth Century Radio Co., Clyde H. Smith president, Coca Cola building, Kansas City, Mo., is reported to be considering establishment of a radio equipment assembly plant here.

TORONTO, ONT.—Queen City Electric Co. Ltd. has been incorporated with 40,000 no par shares by Robert P. Saunders, 330 Bay street, to manufacture and deal in electrical apparatus and machinery.

TORONTO, ONT.—Adanac Construction Co. Ltd. has been been incorporated with 4000 no par shares by James P. Manley, barrister, Northern Ontario building, to manufacture and deal in contractors' machinery.

TORONTO, ONT.—Canadian Controllers Ltd. has been incorporated with $40,000 capital by John S. D. Torry, 105 Douglas drive, to manufacture and deal in mechanical and electrical apparatus and machinery.

TORONTO, ONT.—Young Durham Mfg. Co. Ltd. has been incorporated with $40,000 capital by Edward J. Murphy, Sterling Towers, to manufacture and deal in bed springs and other similar items.

TORONTO, ONT.—Eastern Power Devices Ltd., 171 John street, will start the manufacture of railway supplies. Plant space on Dufferin street, in unit formerly occupied by the Dodge Motor Co., has been leased. W. J. Gilson is manager.

TORONTO, ONT.—Reo Motor Car Co., Lansing, Mich. is opening a branch plant in the plant on Dufferin street formerly occupied by Dodge Motor Co. Floor space of 250,000 square feet is available. First use of the plant will be for assembly only.

WINDSOR, ONT.—Hupp Motor Car Co., 300 Giles boulevard, proposes to remodel a plant unit for use as an assembly plant.

# New Trade Publications

GRAY IRON—Second in its newly-inaugurated series of bulletins, the Gray Iron institute has issued a leaflet on the use of gray iron in the Holland tunnel between Manhattan and New Jersey.

NICKEL STEEL—International Nickel Co. Inc., New York, continues its series of bulletins on use and applications of nickel steel in industry by presentation in the current issue of 14 products in which this material is used.

BUILDING COST—Bulletin No. 13 of a series by the Morton C. Tuttle Co., Park Square building, Boston, discusses the matter of costs of building and suggests methods by which proper figures may be prepared in advance. An illustrative problem is presented and solved.

LUBRICATION—Common faults in lubrication, careless handling and protection of lubrication are treated in the current issue of the publication on lubrication published by the Texas Co., New York. Reconditioning of oils is also treated.

PICKLING—A booklet by the Hanson-Van Winkle-Munning Co., Matawan, N. J., treats of its electrolytic bright dip, a process for electrolytic pickling. The process is described and its application to various pickling operations are pointed out.

TRAMRAIL—Efficient equipment for moving materials is recommended in a leaflet by the Cleveland Electric Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O. Numerous applications of its tramrail devices are shown in illustrations.

AIRPLANE ENGINES—Light Mfg. & Foundry Co., Pottstown, Pa., in a current folder describes its line of airplane engines, light in weight and of low power. Its comprehensive service program is described. Various types of engines are illustrated and special features and distinguishing characteristics are pointed out.

THREADING MACHINES—In Bulletin No. H-75 the Landis Machine Co., Waynesboro, Pa., covers its 1 and 1½-inch threading machines, single and double head, which have just been placed on the market. The complete machine and details are shown in illustrations and complete specifications are given.

HIGH SPEED STEEL—A booklet on high speed steels, the seventh edition, has been issued by Edgar Allen & Co. Ltd., Sheffield, Eng. It covers the complete range of steels in this class, gives instructions on forging, hardening and other manipulation and has sections on angles for the cutting edges of turning tools, on grinding high speed steel tools and on how to order high speed steels.

STEAM GENERATING UNITS—Combustion Engineering Corp., New York, has prepared a reprint of an article on the fifth steam generating unit recently added to the Kips Bay station of the New York Steam Corp., a central heating plant. Illustrations show details of construction of the boilers and accessories. The unit was designed and installed by the Combustion Engineering Corp.

FEED WATER REGULATORS—Northern Equipment Co., Erie, Pa., has issued a bulletin on its line of Copes equipment for controlling temperature of boiler feed water. A new type of valve and regulator recently developed are fully described. In addition to description of the regulator mechanism, which is illustrated, are reproductions of recorder charts showing increased efficiency after application of the regulators.